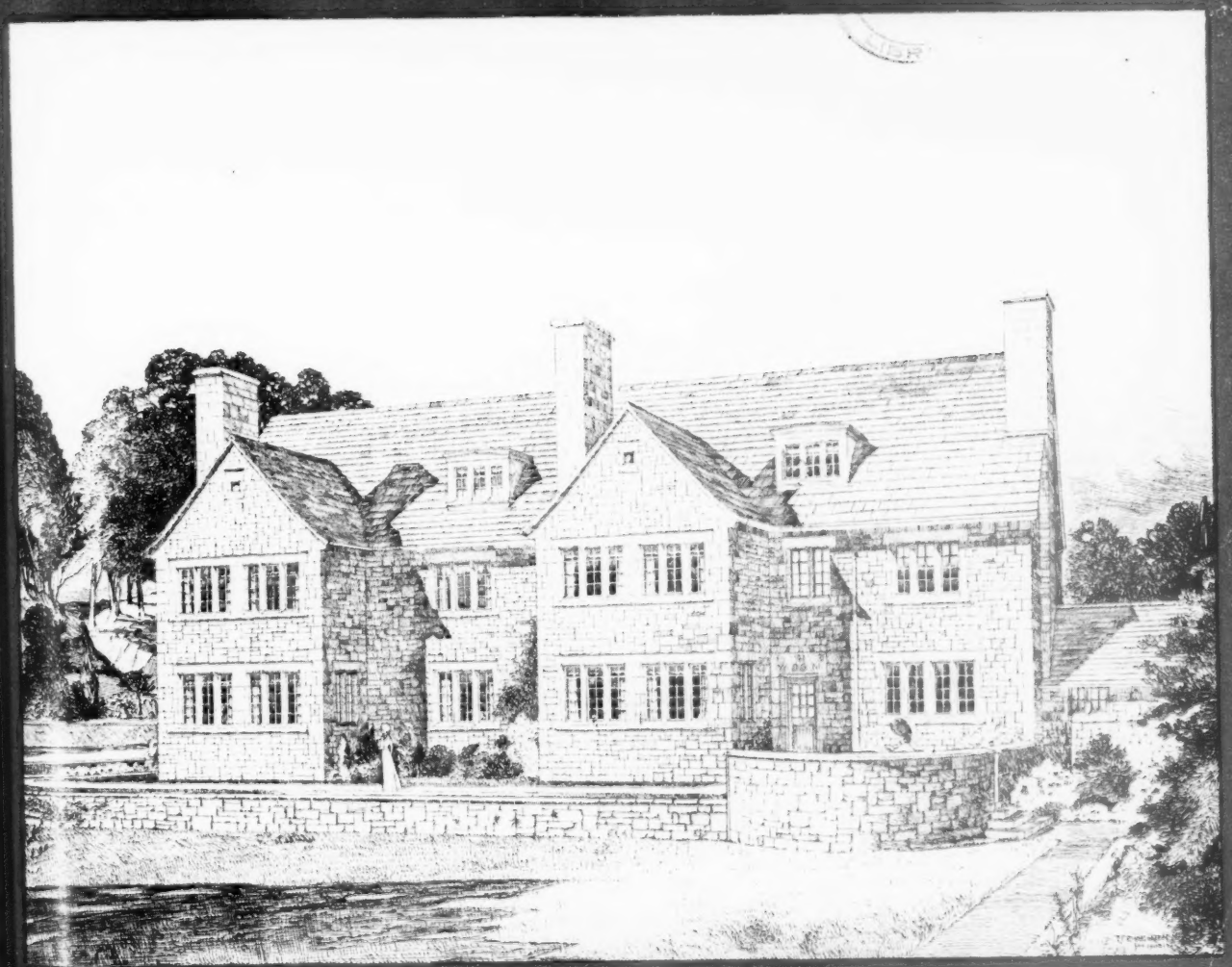
THIRD SERIES VOL 58 NUMBER 2 DECEMBER 1950

THE JOURNAL OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS

66 PORTLAND PLACE LONDON W1 · TWO SHILLINGS AND SIXPENCE



House at Burley, Wharfedale, by Ernest Newton (1896)

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Sessional Papers in the New Year

Draughtsmanship of the Past is the title of a sessional paper by Mr. H. S. Goodhart-Rendel, Past-President, on 9 January. This is a subject of perennial interest to architects and one of Mr. Goodhart-Rendel's many fields of architectural learning. It is rumoured that he has a fondness for the pen drawing which has been now almost entirely replaced by the slicker pencil and wash. This preference is shared by editors of architectural periodicals who find the ink drawing far the more easy to reproduce. Members who are able to attend this meeting can look forward to a specially interesting evening.

The Council's Award of Prizes and Studentships for 1951 will be announced at the same meeting. At the next meeting, on 6 February, the President will deliver his Address to Students and present the Prizes. A criticism of the work submitted will be made by Mr. R. E. Enthoven [*F*].

R.I.B.A. Transport Exhibition

The Transport Exhibition which was to have been held last spring will now be on show at the Royal Institute during February next for a period of about four weeks. The exhibition will illustrate the architect's contribution in the field of transport, particularly in relation to buildings which are used by the public.

The exhibition itself will be divided into four main sections entitled, Road, Rail, Water and Air respectively. The work of British architects will be well represented, but schemes from abroad will also be shown.

Development East of St. Paul's

The Minister of Town and Country Planning has confirmed a compulsory purchase order made by the Corporation of the City of London for an area of eight acres lying to the east of St. Paul's cathedral. This is the first confirmed order of its kind for the City of London and will allow a beginning to be made in the redevelopment of this area according to the City of London plan. Last April the Minister confirmed the first part of the order, covering a small section of the area, so that work could be started on the memorial gardens in time for the Festival of Britain. The planning scheme allows an eastward extension of the precincts of St. Paul's, the closing of the streets of St. Paul's churchyard and Old Change and the making of a new link road between Cheapside and Cannon Street.

Standard Forms of Contract—Revisions to clauses 11, 14 and 15

Members are reminded that slips containing amendments to clauses 11, 14 and 15 of the Standard Form of Contract are available on application to the Secretary, R.I.B.A.

When applying, it should be clearly stated whether the slips are required for forms *where quantities form part of the Contract or for forms where quantities do not form part of the Contract.*

It should be noted that the amendments are *not retrospective.* Separate slips are available for Forms adapted for the use of local authorities.

The International Union of Architects

The Executive Committee of the I.U.A. met in Paris on 5 and 6 October. Mr. Ralph Walker, President of the American Institute of Architects, reported that his Institute was carrying out an extensive enquiry into the problems of architectural education and offered to put the results at the disposal of the Committee. It was observed that there was a certain similarity between the aims of the Working Committee on the Status of the Architect and those of the Committee on Architectural Education. Arrangements therefore were made for close liaison between the two committees. The British member of the Working Committee on the Status of the Architect is the Hon. Godfrey Samuel [*F*].

Later in October the Committee on Rules of Procedure, of which the chairman is Professor William Dunkel of Switzerland, met at Zurich. The Committee on Mechanization and Mass Production in Building met in Paris in November, under the chairmanship of M. Marcel Lods. The Town Planning Committee met in Paris in December under the chairmanship of Signor Cesare Chiodi of Italy; Professor Gordon Stephenson [*F*] is the British member of this committee.

The I.U.A. have completed and circulated a set of regulations to serve as a guide to the organizers of competitions; these follow closely the R.I.B.A. competition regulations. The Government of Ethiopia having invited the I.U.A. to nominate two members to serve on a jury of assessors at Addis Ababa in an international competition for the Imperial palace, the Executive Committee appointed M. Andre Gutton, Chief Government Architect of France, and M. Jean Tschumi (Switzerland) to serve and they have now gone to Addis Ababa.

The Secretary-General, M. Pierre Vago, was instructed to investigate the question of a venue for the 1951 Congress. Hospitality has been offered by Morocco, Portugal and Turkey.

Centenary of the A.B.S.

On page 71 we publish a second list of donations to the Centenary Appeal of the Architects' Benevolent Society. The total up to the time of going to Press is £2,966 2*s*. 5*d*. This is an excellent start to the project for Old People's Cottages, for which the sum of £50,000 is required. Let us not weary in well-doing.

School Building

In a recent speech at Leicester, the Minister of Education, Mr. George Tomlinson, M.P., said that we could do with a much bigger school building programme to meet the shortage of facilities for technical education and the need to provide over a million school places for the increased school population, specially in the many new housing estates.

Some people had suggested that the school building programme might be cut to allow an increase in house building. Everyone agreed that more houses were needed, but it was not realized that 'more houses means more schools.' More than half the houses now being built were in large groups where no schools existed. Therefore new schools had to be provided for the children in the new estates or large sums of money would have to be spent in transporting them to any existing schools which might have enough room.

It had also been suggested that children should start school at six instead of five years of age, and there were a few who wanted the leaving age put back to 14. While this would mean the abandonment of the educational aims which the nation had set itself in the 1949 Act, the capital, labour and materials released by the consequent reduction in the school building programme would be sufficient only for about 10,000 houses, or an addition of 5 per cent to the present housing programme. The suggestion had even been made in the House of Commons that the technical college building programme should be halved, though the relation of technical education to national productivity was obvious. Half the capital resources devoted this year to the improvement of technical education would provide about 2,000 houses. It seemed to him that such an exchange would be very short-sighted.

Rubens Panels in the Banqueting House

The Rubens paintings which formed the ceiling of Inigo Jones' Banqueting House in Whitehall were taken down at the outbreak of war. When they were returned to London in 1945 the opportunity was taken by the Ministry of Works to carry out cleaning and restoration, for which the Orangery of Kensington Palace was used as a studio. The work has taken four-and-a-half years, and the panels are now being replaced.

Included in the work was repair of damage caused more than 300 years ago, before the canvases left Rubens' Antwerp studio. The paintings were started in 1629 and finished in 1634, but the Banqueting House was not ready so they were rolled up, their paint still fresh, until 1635. This caused narrow streak-like scars which have now been made good by the Ministry of Works artist craftsmen.

The paintings were mounted on plywood panels in 1906; in 1939 these had to be sawn into sections to get them out of the Banqueting House windows. They have now been provided with steel angles at the edges, so that a strong and rigid fixing is obtained. The panels are of very great size: the centre oval is 32 ft. by 20 ft. 6 in.; two rectangular pictures are each 25 ft. by 18 ft.; two other rectangles are each 39 ft. 6 in. by 7 ft. 10 in. and four small ovals each 18 ft. by 7 ft. 10 in. Together the panels weigh nearly 9 tons, and the Ministry of Works has the interesting task of hoisting and fixing them to the ceiling framing 54 ft. above the floor.

Damage has been made good, and retouching and varnishes—the work of various 'restorers'—have been eliminated. The panels will now be seen in their original condition and colours. It is hoped to have the work completed early in 1951.

Building Research Congress 1951

A comprehensive congress on building research is to take place in London from 11 to 20 September 1951. It will be the first of its kind ever held. The purpose of the congress is to review the progress made in research in relation to architecture, building and the associated branches of civil engineering. Arrangements are at present being handled by the Building Research Station.

The Rt. Hon. Viscount Samuel [*Hon. F*] has consented to be President of the Congress. The Chairman of the Organizing Committee is Mr. Alister G. MacDonald [*F*]. There are 18 participating bodies including the Department of Scientific and Industrial Research, the Ministry of Works, the London County Council, the Institutions of Civil Engineers, Structural Engineers and Heating and Ventilating Engineers and the R.I.B.A. The Congress will be centred at the Institution of Civil Engineers.

Three divisions will hold concurrent meetings. Division I is concerned with the engineering and structural aspects of building and will cover mechanization, prefabrication and costs. Division II is concerned with building materials and will include a survey of research on weathering and durability. Division III will deal with the various factors influencing comfort and efficiency such as acoustics, heating, ventilation and lighting. Three specific types of building—hospitals, factories and schools—will be considered in the light of these functional requirements. All papers will be circulated to Congress members beforehand and introduced briefly at the beginning of each session so that there will be ample time for discussion. A programme of excursions and visits is being arranged and there will be a Congress dinner.

Membership of the Congress is open to all on payment of the Congress fee of £2 10s. This does not include the cost of some of the excursions, for which separate fees will be fixed, nor that of the dinner for which tickets will cost £2 2s. Further information can be obtained from the Organizing Secretary, Building Research Congress, Building Research Station, Garston, Watford, Herts.

The Institute of Contemporary Art

The Institute, founded in 1947, recently acquired premises at 17-18 Dover Street, London; they have been admirably adapted and redecorated by Jane Drew [*F*] and Maxwell Fry [*F*], and on 12 December were opened by the Earl of Harewood. The aim of the Institute is to encourage collaboration between the various arts, including architecture, by exhibitions, discussions, etc.

The Cover Picture

The contemporary perspective of the house by Ernest Newton is one of several drawings of his work that were presented to the R.I.B.A. Library a few years ago by his son, the late W. G. Newton. Ernest Newton's contribution to the renaissance in English house design which occurred about the turn of the century has been rather overshadowed by that of Voysey and Lutyens and, among Continental architects, of Baillie Scott. This house was built in 1896. The date is evidence of Newton's early contribution to the movement, the house itself of his deep understanding of the English vernacular of building in stone. The perspective is by T. Frank Green. It is drawn with a crisp line, to which our reproduction, necessarily reduced to less than a third (linear) of the size of the original, can not do full justice.

R.I.B.A. Diary

WEDNESDAY 3 JANUARY, THURSDAY 4 JANUARY, FRIDAY 5 JANUARY, AT 3 P.M. each day. Christmas Holiday Lectures for Children. Professor W. G. Holford [*F*]. *Towns and Town-Places*, *Towns and Townspeople* and *New Towns* respectively.

TUESDAY 9 JANUARY 6 P.M. Announcement of Award of Prizes and Studentships. *Draughtsmanship of the Past*. H. S. Goodhart-Rendel, Mus. B.Cantab., M.A., Past-President.

Discussion on the Reports of the Anglo-American Productivity Building Team and the Working Party on Building Operations

At a General Meeting of the Royal Institute of British Architects on Tuesday 28 November 1950. The President in the Chair

Mr. Michael Waterhouse (Past President): Our object this evening is not to go over the ground covered by the two Reports, but to discuss what practical steps the profession can take and is taking to give effect to the recommendations in the Reports and the lessons to be learned from them. We shall get far more by talking to each other than by you listening to me, and I am going to be brief. You may think that I am leaving out a large number of things, and I shall in fact do so, but you can ask questions about them.

The only main reference to the Reports that I am going to make is to say what productivity is. Briefly, productivity is getting the best value for money, whether in materials or in labour. The importance of discussing it now is—as I realize from talking to clients—that the building industry is in danger of pricing itself out of the market. A great many clients are getting thoroughly 'fed up' with the amount of money that they have to pay for the little work that they get done, and it is up to us in the building industry (and in the building industry I include the client, as well as the professional, the contractor and the operative) to change that position, so that we put our industry back where it ought to be and make it highly respected and looked up to.

The Ministry, and in particular the Minister himself, was particularly insistent that something should be done about these Reports and with these Reports; that they should be not merely Reports but grounds for action. The Minister summarized the grounds for action and gave instructions for action. He summarized them under three headings, as follows: (*a*) points for the Government, (*b*) points for the Government, the industry and the professions jointly, and (*c*) points for the industry and the professions alone.

At the R.I.B.A. we have set up an *ad hoc* Committee to deal with (*b*) and (*c*), that is to say, all matters except those which are purely Government matters. The particular items that we have had under consideration are: The practical training of the architect. Planning and production control in all its stages (both the architect's dealings with the client and the architect's dealings with the builder). The co-ordination of building operations. The simplification of bye-laws and regulations in general.

I am not going to expand on education or contractual organization. I am leaving that to Robert Matthew. What I will do is to tell you shortly what has been done and what we intend to do on the other points. In the matter of bye-laws, there have been numerous complaints that bye-law forms are different all over the country and that the bye-laws themselves differ from authority to authority; it has been one of our main objects, through the good offices of the Ministry of Works, to approach the Ministry of Health, which controls bye-laws, to see whether unification and simplification, on the lines of a set of model bye-laws, were possible. After conference it was agreed that modifications and improvements were possible, and, in spite of the difficulties of the Ministry of Health, arising from the fact that it really has no direct administrative control or executive control over local authorities, they agreed to take up and have taken up with the Association of Local Government Officers the whole matter of the modelling, re-modelling and unification of bye-laws throughout England.

We considered methods of practical training, both for students and for post-graduate architects, in contractors' organizations, as well as what one might call practical training on the professional and academic side. Mr. Robert Matthew will tell you more about that.

We also discussed with the National Federation of Building Trades Employers the possibility of a 'get-together' for the exchange of ordinary 'know-how' (to use an American term) on a job. Not scientific research but the exchange of items of common practice by a builder which might not be common knowledge to an architect and *vice versa*. An organization for establishing that is being considered and will, I hope, be set up.

We also considered with the National Federation of Building Trades Employers the very important point of the duties of the client and his obligations to the architect and the need for wide publicity for educating the public in the responsibilities of the client, whether the client is an individual or a Government Department, towards the profession in the interests of efficiency. The reason for this is that efficiency depends upon organization, which is the main lesson to be learned from the Reports. Production control or pre-planning, or whatever you like to call it, is the first joint essential on the part of the profession and the contractors. Greater output by the operatives will be and can only be consequent on high efficiency in the organizing branches of the industry at the top.

The building industry in America is organized for speed and efficiency. Those are its main objects. Why? Because the cost of human labour is so great, the cost of human time is so high, that speed is essential, and efficiency is essential for speed. How do the Americans do it? The answer is extremely simple: by having materials, drawings and everything else ready at the right time, by working to a careful y drawn-up programme and by nobody being allowed to be late.

In this country our primary difficulty, of course, is materials. Unless materials are available at the right time, of the right type and in the proper quantity, benefit derived from any form of planning or organization is negatived and rendered useless, and under the present régime materials are almost the entire responsibility of the Government. Our two Reports have brought that lesson home. We in this Institute, The National Federation of Building Trades Employers, and all the organized bodies concerned have not failed to bring this lesson home to the Government and to insist that unless materials are available nothing that we can do is any good. If materials are in short supply there must obviously be control, but, as we see it, control must be so organized that any job when it starts can have what it wants when it wants it, and that, as I see it, is the duty of the Government to our industry.

The architect, who is the prime organizer, can not function properly unless his client knows the duty that he owes to the architect, in supplying him with information and so forth. That means the client either making up his own mind or being led to make up his mind by his architect. Clients, broadly speaking, are quite unaware of that aspect of the matter. They do not appreciate what we can do and should do. It is our duty to teach them their duty to us. That is appreciated by the National Federation of Building Trades Employers, and we are working on a memorandum to be issued to the public, telling them what they owe to us and telling them what they must do if we are to give them our best services, which they have the right to expect of us.

Once the job has left the architect's hands it is the builder's business and function to organize. We know that the builder can not exercise that function properly unless we have done our duty to him.

Briefly, our duty to the builder is to give him what he wants and what he ought to have when he wants it. Architects frequently fail to do this. The builders say that they have not got the drawings and that they can not get the drawings from the architect. We know that it is often the client who has made it impossible for us to give the builder what we ought to give him, and I would say that the nation's biggest clients, the Government Departments, are in this respect perhaps as much to blame in some cases as any individual client. But still this is the ideal at which we must aim.

In the United States, as we have learned from the Report, the contractual method, by which drawings have to be complete and the specification has to be complete if there is to be a tender at all, ensures that the contractor has at the time of tendering all that he ought or can want to have. Our system of tendering with bills of quantities allows a loophole, a latitude, for undetermined items and opportunities for the client to change his mind with a knowledge of what his change of mind will cost him as agreed by variations in the bill. We must not let ourselves or our clients abuse our tendering system in that way. It is possible for us to give with the bills of quantities and the drawings all the information that the contractor needs, and to have all subcontracts ready for letting at the main tender time.

You will have seen the exhibition of American working drawings* that we have in this building. Those were not selected because they were very complicated or in any way extreme examples of what the American sets of working drawings are. I am absolutely confident that we never need to put so much labour into the drawings as the Americans do, and that our normal type of drawings and our normal type of bills of quantities are better things to tender on than the drawings that you have seen in this exhibition. They lead to closer tendering, fairer prices and better adjustment of variations.

Finally, I would say that there is only one really just criticism of our Productivity Report. It is that we do not sufficiently emphasize two main conclusions, the first of them being that we can not copy America. There are a great many things that we should never want to copy, but, if we did want to do so, we should find that we could not. The differences in our conditions are so great that we can not copy American methods or American practice, but we can learn from them how to have everything ready at the right time. The second main conclusion which is not emphasized as much as it might be is this, that if we use our methods of drawings, our methods of quantities and our methods of tendering to the fullest advantage, we are very much in advance of the best American practice.

Mr. Robert H. Matthew [*A*]: Mr. Waterhouse has covered the ground so effectively that I wish to deal very briefly with only two aspects of our Report, both of which have some considerable though rather indirect bearing on productivity. The first comes under the general heading of 'Education', and the second comes under 'Office Practice', but I should say at once that I am using both these terms in their very widest sense and that, as far as education is concerned, neither the conditions nor the duration of our tour in the United States enabled us to make any close examination of school curricula or of particular educational methods.

In the Report of the Mission appointed by the Ministry of Works to examine building methods in the United States in 1944, the Bossom Mission, I find the following note: 'The American architect during his training is encouraged to keep in close touch with industrial research and development as well as with the practical building work in the field'. That was in 1944, and I think that in 1949 we as a team found the general sense of this observation to be true.

As far as preparation for registration is concerned, the period of practical work required has now been extended from one year to three years. This requirement of a considerable period of professional experience before admission to the registration examination is a recognition that professional education must proceed well beyond the usual limit of academic work.

The post-graduate education of a candidate for recognition falls into two parts: (1) study and instruction leading to improved professional competence, and (2) the development of a working appreciation of professional ethics. These two aspects appear to be taken equally seriously by the young architects seeking registration, by their elders responsible for supervision and guidance, and by the American Institute itself.

Many schools lay down minimum vacation periods in approved architects' offices or in contractors' organizations, and it was also a familiar experience for us to meet graduate architects or engineers on the job, either as assistant clerks of the works or as contractors' supervisors.

This tendency to get on the job is probably helped by the common American practice of working through college—of 'self-help' when the habit is started early—but I am quite sure that, apart altogether from the practical experience gained, which is considerable, the professional man picks up and retains an attitude to the contractors' staffs and to the workmen which is of the very greatest value throughout his professional career.

At the same time, this is not altogether a one-way operation. We have noted in our Report the very high level of job supervision throughout the industry, and I believe that this is due in no small measure to this 'professional infiltration'. Some of the liveliest characters that we encountered in our tour were these professional graduates taking responsible supervisory jobs in a sphere where brains can be of the very highest value in the economic progress of the work.

While I am dealing with the subjects of supervision and education, I think it is worth while to mention something to which we have drawn attention in the Report, namely, a course of training which has, I believe, no direct parallel in this country. We have set out the curriculum of this course in some detail in an Appendix to the Report, so much impressed were we by the talks that we had with members of the staff and by some of the graduates whom we met on jobs during the tour. This course is given in the Department of Building Engineering and Construction in the Massachusetts Institute of Technology. It provides a basic training in structural engineering, design and building construction, and one of the main aims is to develop an awareness in the student of the relative problems of the owner, the architect, the engineer, the builder, the materials manufacturer and the distributor. This comprehensive aim is important for the type of job that the graduate will take, namely, a managerial or supervising job, either working for the architect or resident engineer or for the contractor. It is a four-year full-time course, and it seemed to us to fill in a gap which still remains in education for building in this country.

The emphasis on the relatively close contact between the architectural limb and the great body of the industry does not, of course, stop in the educational sphere—rather does it start there and develop into an attitude of mind characteristic of the whole profession, an attitude which I suppose is a natural emergent from the history of American development, particularly in the industrial sphere. I do not need to tell an audience of architects the story of American architecture in the last hundred years. It is perhaps sufficient to remind you of what is probably the main reason for the early industrialization of building materials production, namely, the abundance of materials in America coupled with a shortage of skilled labour—the reverse of the conditions generally prevalent in Europe.

The rapid spread of the balloon timber frame and later the iron and steel frame, both originating in Chicago, was closely connected with the level of industrialization in the United States at that time. The first practically converted building in wood from a slow and expensive handcraft to an industry, while the second led to the great development of high buildings, first in Chicago, although the foundations there were about as unsuitable for high buildings as one could imagine, and later in New York. These high buildings, on congested sites, were themselves the cause of intensive rationalization of building components, particularly in plumbing and in the other services.

These historical factors at an early stage forced on the American architect an appreciation of the economic advantage of planning and of constructing to suit standard dimensions and factory-made components, and the very fact that buildings of this kind were actually being built in large numbers had a considerable reciprocal effect on materials production itself.

I think it would be true to say that, if the American architect had not been for the last 80 years just that step ahead of current

* See pages 42-43.

industrial thought, the efficiency and economy which we saw and so much admired in American building would not have been achieved, at any rate to the extent to which it has in fact taken place.

I am not going to enumerate all the details of construction which we have noted in the Report—they are there for your benefit and I hope that you will read them—but I should like to draw your attention to two widely different matters which we thought important enough to mention, namely, the Quality Control of Concrete and Modular Co-ordination. I am not myself a structural engineer or a purveyor of cement, but I am near enough to them to realize that this quality control of cement is almost literally a very sticky subject! The fact remains, however, that quality control has reached a high degree of practice all over the United States and that the rule-of-thumb methods which are still almost universal here look like becoming obsolete. This matter, I am glad to say, has been taken up recently with the Ministry of Works Central Council for Research, and I do not wish to do more than suggest to the members of the profession that they might become a little more acutely aware that this problem and this opportunity do in fact exist.

With regard to modular co-ordination, you are probably aware that attempts have been made in various countries and at various times to establish a module. The American Standards Institution, with the assistance of the Institute of Architects, before the war established a project known as A.62, which seemed at that time to put the module on its feet (if a module can be put on its feet). Many manufacturers recast their entire production, and there are now many building materials, notably bricks, tiles, cement blocks and windows, which are made to the modular size, which was the very small dimension, as it seemed to us, of 4 in. Unfortunately A.62 has suffered a hiatus, as its continuance, like that of so many projects in America, was dependent on private funds, but the general effect on the industry has already been felt, and the Small Homes Council, working in association with the Building Research Department of the University of Illinois, is now using modular products and dimensions in its experiments to develop more efficient methods of house-building. Incidentally, the study houses now being built by the Small Homes Council and given the name 'industry-engineered homes' are interesting from the point of view of organization of construction, including delivery of materials to the job, handling of materials on the site and construction techniques. The houses are designed on a completely modular basis, no materials are cut on the site, roofs are designed as trusses, and partitions are assembled after the floors are laid, their order of placement on the floor being very carefully worked out. Sash windows are assembled off the site, weather stripped, glazed and painted in the factory. As these houses were in course of construction when the team visited the University of Illinois, no final costs were obtained, but the overall saving, as compared with normal construction, was estimated at 10 per cent, with a labour saving of 21 per cent. Apart from the actual figures and costs to be obtained from such an experiment, the methods employed and the general approach, linking planning and construction with maximum economy in materials production, are, I think, sufficiently interesting for our own Building Research Station to watch these experiments very carefully, as I believe it does.

As I have been attempting to give you some picture of the interaction between the architect and his background in America (I am afraid this picture must be very fragmentary), I should like to mention one further link which has some practical result. This is known as the Building Materials Producers' Council, and again I think it has no direct parallel in this country. It was started 27 years ago, to encourage the better use of materials. It is affiliated to the American Institute of Architects, and joint committees representing the two bodies carry on an extensive yearly programme of research and information service. It is somewhat typical of American enthusiasm and methods that the Council not only prepares and issues bulletins and pamphlets for the information of architects and contractors but also sponsors high-powered radio programmes for the same purpose! In addition, the Council runs courses of instruction for builders and provides manufacturers of building materials with up-to-date knowledge of the trends of constructional programmes. The Council also collaborates with the American Institute of Architects in the training of architects and in the running of the Building Centre in Park Avenue, New York.

I should perhaps say that as a team we had very little opportunity to examine building materials production, but that does not mean that we did not recognize the importance of this side of the industry. The fact that building materials in the United States appear, as a very rough average, to be only slightly higher in cost than they are in this country, in face of the very high cost of labour compared with our own, appears to indicate a very high level of efficiency on the part of the producers as a whole.

We are dealing mainly with two Reports at this meeting, but I do not think that it is inappropriate to mention in this connection the Report of the Committee of Inquiry set up by the Minister of Works in 1948 to examine the distribution of building materials and components, known as the Simon Report. On the contrary, I think it may be of some particular interest, not only because the Report contains some outspoken criticisms of a side of the building industry which is seldom discussed but also because the position in America and Canada is examined in an illuminating appendix, in some detail, for the purpose of comparison.

The recommendations made are positive, both short-term and long-term, but reference to these by the Working Party in the other Report which is before us this evening is remarkable for its brevity. In fact the Report says in categorical terms that the restrictive arrangements now affecting the distribution of building materials and components are not in the national interest, and I understand that the Minister of Works has already taken action in the matter.

The conclusions reached on the situation in America on this matter are sufficiently interesting, I think, to quote. The Simon Committee says: 'We believe that the conditions obtaining in the United States of America and in Canada provide evidence that the removal of restrictive practices would create keener competition and a cheaper and more efficient service'. The important thing from the point of view of the architect is that, by the strict operation of the Anti-Trust Laws, the field is open to the newcomer with new ideas. Every producer is free to distribute his goods in any way he likes, and the energies of the Trade Associations, in the words of the Report, are canalized into 'almost entirely constructive fields of endeavour'. I like that phrase 'almost entirely constructive fields of endeavour'. I do not wish at this meeting to develop this point further, but I am sure that all architects interested in the free development of new methods, materials and equipment will appreciate this frank analysis of British practice and the comparison with that of America and Canada.

I should now like to turn to the other aspect with which I am going to deal, namely, the architect's own immediate interest in the sphere known by the unhappy term 'pre-planning', which is much emphasized in both the American Report and that of the Working Party. Incidentally, in going through the curriculum of one of the American schools I came across a still more unfortunate term. I hope that, if a Mission goes to the United States to examine architectural education, it will not result in our curricula commencing under the title 'First Year (pre-architecture)'!

The sets of architects' drawings now on view in this building represent a fair cross-section—not a highly selected one—of architects' drawings, and I think they speak for themselves. Of course there, as here, architects' offices vary enormously in size, but nearly all follow the same methods. Most contracts are on a lump-sum basis, and, there being no bills of quantities, the plans must be drawn in great detail and be completely clear. You may have noticed that for jobs of any size the sets of drawings are usually divided into four sections, namely, architectural, mechanical, electrical, and plumbing. The architectural set contains the site information, which is nearly always extremely detailed and supplied by the building owner. Full sets of drawings are usually supplied in sufficient numbers for the general contractor to obtain bids from all the sub-contractors, and you can imagine that on a sizeable job this means a very large number of copies. As an alternative, the sub-contractors may visit the contractor's office to get the necessary information, and a special

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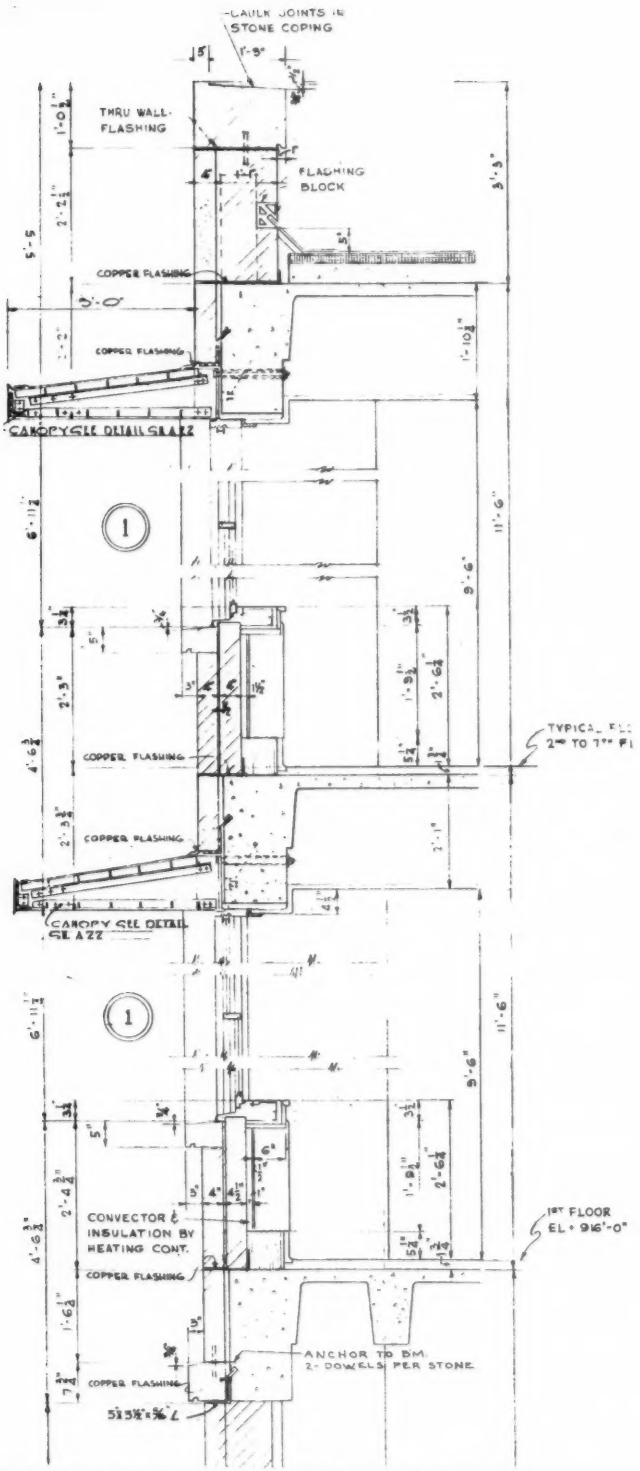
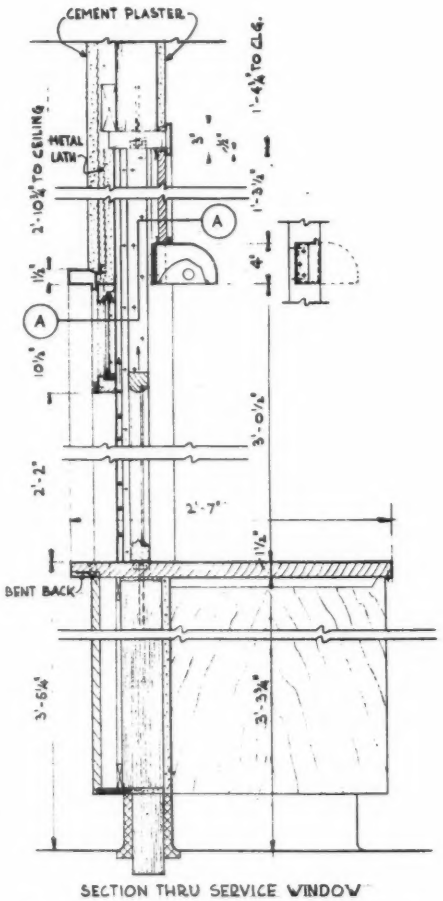
American Working Drawings

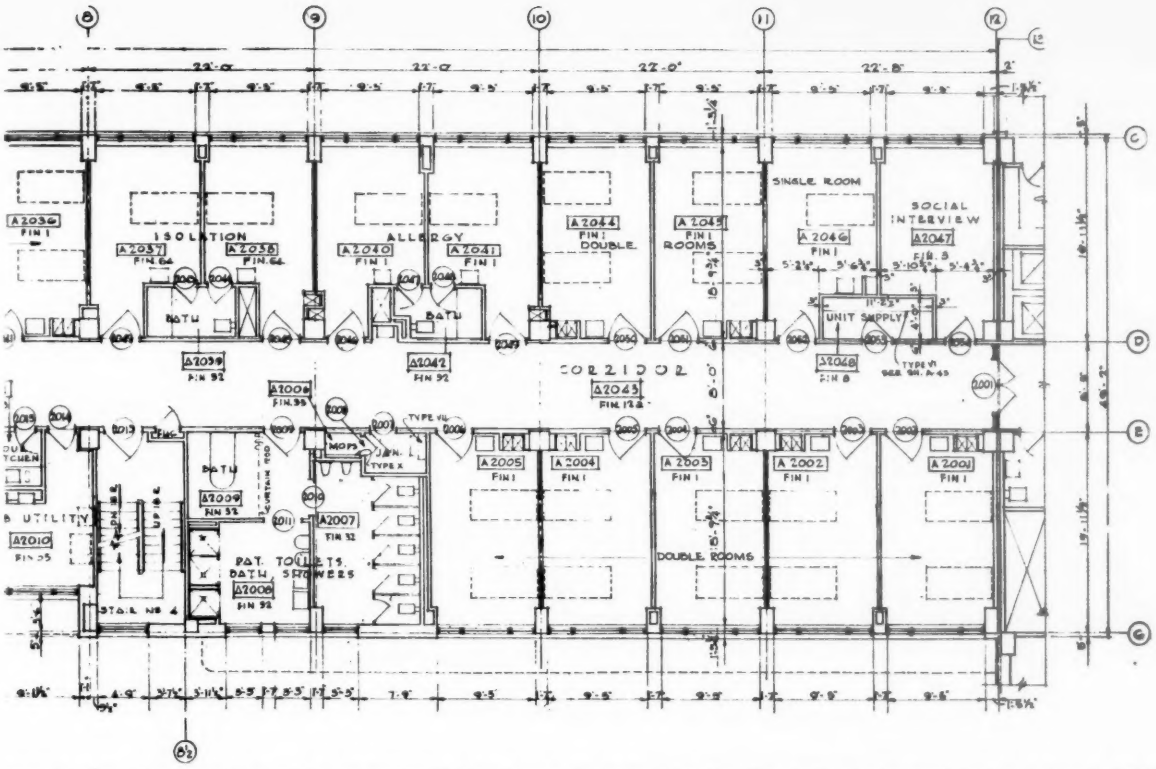
On these two pages are samples of American working drawings from one of the sets recently on view at the R.I.B.A. They are of portions of the Veterans Administration Hospital at Madison, Wisconsin, for which the architects were Holabird and Root and Burgee. The set consists of 398 sheets, each 42 in. by 32 in. and it covers the whole of the work. The first drawing shows an outline key plan of the building, a 'vicinity map' showing its location, tables of abbreviations and architectural symbols and an index to the drawings. The site work, grading, roads, drains, etc., are shown on 33 sheets, the planning, structural and finishing details on 55, the foundations, floors and r.c. framing on 22, the heating on 26, the plumbing on 28, electrical work on 22, and various detached buildings on the remainder. These drawings were all prepared before the contract was let. The samples are reproduced here at half the original (linear) scale.


CAULK JOINTS IN STONE COPING
THRU WALL FLASHING
FLASHING BLOCK
COPPER FLASHING
CANOPY SEE DETAIL SE A22
TYPICAL FLR 2ND TO 7TH FL
CANOPY SEE DETAIL SE A22
CONVECTOR & INSULATION BY HEATING CONT.
1ST FLOOR EL + 916'-0"
ANCHOR TO BM. 2- DOWELS PER STONE

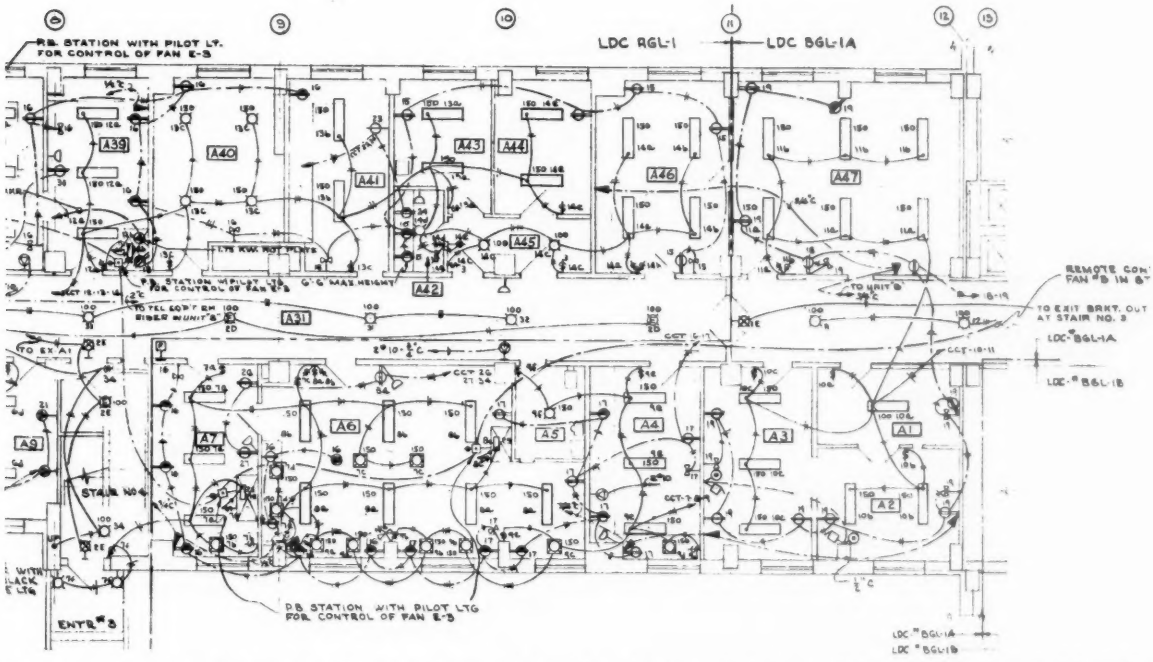
One of several sections at a scale of $\frac{3}{4}$ in. to 1 ft. through the face of the building



A typical detail at a scale of $1\frac{1}{2}$ in. to 1 ft. Other details are full size, half full size and quarter full size



Portion of a typical plan. The rooms are numbered for reference to the specification. The doors are also numbered, and there is a full schedule of doors attached to the set of drawings



Portion of an electrical drawing showing the switching and grouping of lights. All fittings, switches and plugs have serial numbers corresponding to the types specified

(*Continued from page* 41)

sub-contractors' room is frequently set aside for that purpose.

One of the best sets of drawings on exhibition—I think it is a model of its kind—is for a 500-bed hospital by the firm of Holabird and Root and Burgee of Chicago. This set has been photographically reduced to half-size and bound for distribution. In spite of its reduction, every page is extremely clear, and at the very beginning of the job the contractor is left in no doubt about what is wanted.

Mr. Waterhouse has referred to the question of variations. Of course, as there are no quantity surveyors or bills of quantities, variations of the contract must be negotiated with the contractor, and it might well be that the work has reached a stage at which any additional work could not be carried out at the contractor's unit cost for the original work. However this may be, it is a fact that most jobs, including the largest, go through with remarkably little variation, once the jobs go out to tender, *and no job goes out until all the design and drawing work is completed.* The architect is then in the very happy position of having nothing to do but supervise, and this he does extremely well. As for the builder, he has no possible excuse for inefficient planning; indeed, in America he needs no excuse, for even more than the architect the American builder has organization and planning in his bones to a degree which even the excellent builders in our team must have secretly envied, but that is another side of the story.

There are many reasons—and we all know what they are—why it is difficult for any of us to plan carefully ahead. The main lesson of the Report, as far as architects are concerned, is that it is *only* by such planning that the real productivity of the industry can be raised. I hope, therefore, that as a profession we shall not shelter behind a bleak curtain of excuses. I am sure that we shall not do so. The problem before us, and it is an urgent one, is, quite simply, to make the most of what we have. There are many deterrents to maximum efficiency, but I should like to say this in closing, because we have been told many times that E.C.A. (under which the productivity team functioned) has always intended to be a two-way process: I believe that we have two advantages of which the Americans might take note.

First, we now have planned programmes for a considerable part of our total national building budget, notably for houses and schools. This gives our public offices, at any rate, the greatest possible opportunity both to think ahead and to link up, on the basis of a continuing volume of work, with building research on the one hand and with industrial production on the other hand. That is an opportunity given to few offices, I should say, even in America. I think that a team of American architects and builders visiting some of our public offices might well be surprised at the advances in technique now taking place, not in spite of our adversity but *because* of it, and that leads me to my second point of advantage. The British are traditionally credited with a genius for improvization. I believe the matter goes even deeper than that; I believe that we are perhaps at our best when our resources are most limited. 'The burr under the American saddle', we were reminded when we landed in the United States, 'is competition'. Perhaps we have a small burr of our own, and perhaps the prickles are felt most keenly when the old horse has not much idea where his next breakfast is coming from. Is it too much to suggest that the British burr might, by some future Linnaeus, be termed 'co-operation'?

Mr. M. H. Thackray: We have listened with great interest to the addresses by Mr. Waterhouse and Mr. Matthew, both of which were full of promise that something is going to be done in this matter. To members of the productivity team, and I have no doubt also to the members of the Working Party, it is extremely gratifying to know of the great interest that our Reports have aroused. I estimate that, since the American Report was published in the Press in June, the team collectively have addressed between 25,000 and 30,000 people at the various meetings which have been held up and down the country. The attendances and also the intelligent inquisitiveness of the audiences at these meetings have been most heartening. Our trip to the United States, with its pleasures and its heartburnings, seems rather remote to us all now, but these meetings are very fresh in our memories. That they have served some good purpose I do not think can possibly be questioned. They have served to make our own shortcomings stand out in relief, and they have also helped us to appreciate more fully the difficulties of the other sections of the building industry. How helpful it would be if some event on similar lines to the American trip could be staged every three or four years, so that industry and the allied professions and the Government would be bestirred to discuss their problems together. I feel sure that there would be no shortage of volunteers if another such trip was arranged.

The functions of the quantity surveyor are so closely bound up with those of the architect that much of what has already been said this evening has a direct bearing on the ability or otherwise of the quantity surveyor to operate in an efficient manner. First on the list, of course, is the provision of proper particulars, or what is now so often termed pre-planning, which enables the quantity surveyor to prepare an accurate bill of quantities. This most important duty of the architect has been fully dealt with both by Mr. Waterhouse and by Mr. Matthew, and I will, therefore, content myself with mentioning only one aspect which I feel should be underlined.

In recent years some architects have been more inclined to say that they have an arrangement whereby their quantity surveyor prepares his quantities at the same time as the architect prepares his drawings. If by this is meant that a comparatively few minor details are passed on to the quantity surveyor whilst he is measuring the carcase of the buildings, well and good. I think nobody would quarrel with that. If, however, the architect passes a few drawings to the quantity surveyor, so that he is in a position to tell his client that the quantity surveyor is at work, I am sure we all agree that this should be avoided.

Another way in which the architect can help members of my profession is by giving sufficient warning when a job is approaching the quantities stage, and, having arranged some date when he will be passing the drawings to the quantity surveyor, by adhering as nearly as possible to that date.

It will also greatly assist the quantity surveyor if quotations from nominated sub-contractors can be obtained on a more systematic basis. A standard form of tender for nominated sub-contractors has recently been drafted and has been discussed by the R.I.B.A. and the R.I.C.S., and I hope that this draft form will not be lost sight of in the wider discussion which is going on at the present time with regard to the 'to be or not to be' of the nominated sub-contractor.

In return there are, of course, many ways in which the quantity surveyor can and should help the architect. First amongst these is that all quantity surveyors should guard against the practice of overtrading, so that they are in a position to prepare their bills of quantities and, even more particularly, their final accounts efficiently and expeditiously.

Secondly, quantity surveyors should stand squarely behind the architects to support them in respect of this ever-increasing pressure to start work on the various sites before they have had time to complete their scheme. In this connection I may say that I have recently been taken to task by the Editor of THE BUILDER, who in a leading article says that, whereas there is no doubt that everybody should resist this pressure, he does not feel that it is the place of the quantity surveyor to do anything in the matter. Personally I am not impressed by that criticism, because I still feel that all of us, even the humble quantity surveyor, must endeavour to suppress this evil.

So far as technical education is concerned, there is just one personal comment that I should like to make. On leaving school I was fortunate enough to spend just over a year in a joiner's shop and some twelve to eighteen months out on a building site. At the age of 18 or 19 I think I felt that my time could have been better spent, but since then I have realized to the full the benefits that one receives from spending a period on the job and in a joiner's shop, particularly from the point of view mentioned by Mr. Matthew, that is, getting to know the attitude of the men on the job.

Mr. N. Stanley Farrow, M.B.E.: I feel that the fact that I as a builder have been asked to come here tonight to speak at one of your general meetings is an expression of the team work that is advocated in both the Reports that we are discussing on this occasion.

I had better not mention the word 'pre-planning', as it has been the subject of criticism by a Minister of the Crown amongst

other people. On looking at Webster's Collegiate Dictionary last night, I saw the word 'pre' described as a prefix denoting priority. It is probably lack of priority that has been given to the production of plans that has caused both teams to fumble for a new word to cover what they are trying to express.

I believe I am right in saying (and I think that Mr. Matthew and Mr. Waterhouse will agree with me) that the period which elapses between the time when an architect is commissioned to carry out a particular job and the time when the project is actually completed is probably the same on both sides of the Atlantic. As an example I will take a job that would take two years from start to finish. I feel that in this country we should probably start work on the site from six to nine months after the architect had been commissioned and spend 15 to 18 months on the erection of the building. The Americans would be more inclined to spend 18 months in planning the job and six months on the site. I would suggest that it is when the contractor is working on the site that the building in fact costs the money. I should like to make a plea to all architects in their own interests and in the interests of their clients to cut the erection time to the absolute minimum, and I feel that the only way in which they can do that is by planning the job in the greatest possible detail and giving all the information to the contractor before he starts work on the site. Only by doing that can the architect be completely exonerated from all blame in connection with delay.

It is interesting to note in passing that in the average bill of quantities in these days it is unusual to find less than 40 per cent of the contract figure made up of nominated sub-contractors and nominated suppliers, and I think that this tendency at the present moment is on the increase. On the face of it I do not see that there is any real harm, but I would suggest to you that in practice it does cause considerable difficulty, because in connection with those nominated sub-contractors and suppliers there is an opportunity for delay after the general contractor has started on the site. There does not appear, to my mind, to be any urgency to get them fixed up before work starts, and I think that is one of the points which all of us ought to watch very carefully.

There are two other points that I should like to mention, neither of which has been referred to yet. The first is the recommendation in our Report that the question of the more careful selection and the better training and payment of clerks of works should be looked into. I feel that in this country the clerk of works is looked upon to a certain extent as a policeman, and if there is any criticism of our police force in this country it is that they are more inclined to detect crime than to prevent it. In the United States the clerk of works is a most important part of the building team, and by looking ahead and helping the contractor he plays a tremendous part in the speed of construction.

The second point that I should like to mention is the question of mechanization. More and more contractors in these days are demonstrating in a practical manner their increased interest in mechanization, and I think that it is important to realize the part that design plays in the use of mechanical aids and machines. Unless the building is designed in a suitable way no machine, however ingeniously or cleverly designed, can be used to its greatest effect, and I should like to suggest to architects and engineers that they should realize now that we contractors are mechanizing wherever we possibly can and that it is up to them to design their buildings, if possible, in such a way that the greatest effect and economy can be obtained from these new machines.

Finally, I should like to say a few words on the question of pride. I think I am right in saying that the feeling which impressed the members of the building team that went to America almost more than anything else was the pride that the Americans had in their construction industry. It is the No. 1 industry in America, and the operatives in that industry are paid higher rates of wages than those in any other industry. In this country our building industry is now No. 13 on the industrial list. We have lost the place which we held before the war, which I think was No. 3. Our industry suffers and has suffered in the past years tremendously from a great deal of ill-informed criticism, and I feel that to a certain extent we have lost our pride. I sincerely hope that one of the results of the visit of the team to America will be that we shall recapture some of the pride that we used to have in our industry and which the Americans have in such abundance.

Mr. A. L. Roberts (Hon. Treasurer): I should like to refer to a matter of importance to us as architects which has come to my notice quite recently. My district is in the Southern Federation, and I understand that there was a meeting of builders at Bournemouth a short time ago, at which they agreed to adopt a system of remuneration to competing contractors for pricing bills of quantities. The method which seems to be followed is that there is a head organization in London, and the builders who are competing, either by invitation or in answer to advertisements, inform the headquarters that they are tendering, and before they send in their tenders they are told what sum of money they are to add to their bill for the purpose of remunerating the contractors who are competing. The headquarters know from the applications they receive who are competing for the job, and I understand that of the total sum, which is distributed through the bill, so that it can not easily be detected, 15 per cent. is paid to the headquarters and the remainder is divided evenly between the competing contractors by the contractor who gets the job. We as architects frequently have to prepare approximate estimates, particularly in connection with our applications for licences for building works, and this is an item which may amount to a considerable sum on a large job and which may not be taken into account in our approximate figures.

Furthermore, I think we ought to consider whether this is a desirable position. I can only say this, that I know one architect, a Fellow of this Institute, who has quite recently advised his client on a particular job to remunerate the competing contractors direct, and the builders who have been invited to tender have been told that if they propose to adopt any but the normal method of pricing the bill they should return the documents.

I should like to know, first, whether this system is being adopted universally throughout the country, and, secondly, whether in these enquiries in America any information about the method adopted there in this matter was obtained. I think that it is a very important matter for which competing contractors should be remunererated, but I am not so happy that this should be left to some organization outside the architect and without the knowledge of the architect and the client. I should be interested in any information that could be given on this subject.

Mr. Michael Waterhouse: This sounds to me like the old trouble of the London Builders' Conference, which has been dealt with by this Institute ever since it first began. I had not realized that it had raised its head again at Bournemouth. With regard to the second question, as far as we are aware no such system exists in the United States.

Mr. C. R. Whittaker: I should like to welcome the reference which Mr. Matthew made to the prevalence of site work for students of architecture in the United States. Last year I was fortunate enough to spend some time on the South Bank site, working on the concert hall for which Mr. Matthew is responsible, and I found that this part of my education was a time of extreme value. I have found since in my design work that it is very important to think of the design process as a continuing thing; we should not think of the design as something which we pass to the builder and which he does his best to sort out in terms of time and actually getting the building up. I learned also on this particular job of the eagerness of the workpeople to co-operate with the builder himself on Joint Production Committees, and I think that the recommendation that is made in the Working Party's Report in this connection is a valuable one.

Much of the work that I did on the South Bank site as an ordinary labourer in carrying things about, and so on, could well have been eliminated if each day and each week more thought had been given to how the job as a whole would progress, how the materials which were coming on to the site would be needed and where they would be needed. That sort of forethought on the job would have saved me and many other people a great deal of unnecessary walking about in the mud. Still more of the work which I was doing could, I think, have been eliminated by having a far wider range of machinery on the site, and the use of cranes, hoists, mechanized lifts, and so on, which at the stage at which I was on

the job were not as widely used as they might have been. But, of course, the concert hall is rather exceptional in regard to the scale of work that is being carried out and the size of the contractor organization which is doing it.

I imagine that the builders themselves remember the days of what have been variously described as slumps, hard times, and so on, when obviously it was easier to reduce the item of current expenditure marked 'labour costs' than to reduce the item of depreciation of large machines. There is also the fear which is present in the minds of the workmen and to which attention has been drawn in both these Reports—the fear of unemployment.

I think that the fears of the employers and the workmen and also, to some extent, the restrictive practices to which attention has been drawn in the Simon Report, could be overcome if we had a building programme which was expanding rather than static, a building programme which was not fixed at 200,000 houses a year, or perhaps fewer, but was going to increase steadily from that number. I think that, before the profession starts making demands on its clients—whether they be individual clients or committees or councils or anything else—to recognize their responsibilities to the profession, the profession should recognize its responsibilities to its various clients, if it is going to regard itself as a social service, and should demand a larger building programme, which would be obviously to the benefit of ourselves, the builders, and the community as a whole.

Mr. A. W. Kenyon [*F*]: As this is a meeting of the Royal Institute of British Architects and a great number of architects are here, we are naturally willing to take the responsibility for the criticisms that are levelled against architects, and I am sure that we shall do all we can to correct any faults that we may have: but I should like to feel having done that, and assuming that the contractors get all the drawings that they require—the architect's drawings, the consultant's drawings, and so forth—that we shall find that the contractors themselves will get the organization into the job.

We have heard tonight about clerks of works. We have very few clerks of works in this country who are really capable of helping organization on the jobs. Clerks of works are not properly trained, and they are not properly paid. I feel that this is a great weakness from which architects are suffering, and they do not get the help which they should have. I also think that the foremen in the building industry, good and clever though they are at their work, are not trained for high productivity. As was said just now, eighteen months planning and six months carrying out the work does mean a terrific organization on the building site, and I should like to hear from any of the builders here what they are doing to increase or improve their organization on the site. I will not go into the hundred and one little things that we find on building sites, such as bad conditions of hutting and bad conditions for the men, which seem to be prevalent all over the country. I am getting very little help at the moment from some of the smaller builders, of whom there are probably more in this country than there are in America. I hope that all architects will do their best in this matter, but I should like to know from the builders what they intend to do generally to organize the work on the site.

Mr. Michael Waterhouse: I think Mr. Farrow can answer this question, but you might like to know that the Minister's Council devotes a great amount of time at its meetings to the question of training for industry.

Mr. N. Stanley Farrow: I think that all builders are very worried at the moment by the fact that they have not got the right staff to carry out the job. I have a feeling that in America the builders gain tremendously by the fact that they get a large number of young men who come from the universities with degrees at the age of 24, ready and willing to work with contractors at a low wage in order to get a start in the industry. I felt when I was in the United States that that contributed a tremendously vital force to the construction industry. In this country I think we have relied to a very great extent on the men who, as we say, have been brought up the hard way. We all know them, and they are indeed first class fellows, but I would suggest that, with the changes in the industry at the moment, the new methods and new techniques and new materials, the time may have come when it is too much for one man to become a fully qualified craftsman and a fully qualified administrator. I should like to see a large number of men coming down from the universities who would provide the same sort of vital force that the American construction industry gets from the universities in the United States.

I think that the industry is taking this matter very seriously. We have encouraged the setting up of foremen's organizations and have encouraged existing foremen's organizations in London to a great extent, and foremanship courses are being instituted regionally all over the country, so that in due course we may get a greater proportion of fully trained general formen.

Mr. Michael Waterhouse: It was made quite clear at the last Minister's Council meeting that the output from the technical colleges of men who have graduated in the building industry was readily absorbed by the building industry, and we heard from four technical colleges in the north of England that there were at least two employers waiting for every graduate they produced.

Mr. H. S. Scorer [*A*]: Just how important do we think productivity is? In our sense of values as architects, how much stress are we going to put on productivity and how much stress are we going to put on the various other qualities which as architects we consider very important? I think that this aspect of the problem—just exactly how important we think productivity is—will determine to a very large extent the success with which we deal with the question of productivity.

This comes, I think in two ways; first, in the architecture itself. We have been assuming the traditional form of building, but if we are going to aim at the maximum productivity, will not that affect the architecture itself? Shall not we have to put up buildings which are specifically designed for maximum productivity?

The other aspect is in the offices. I always feel that we are far too prone as a profession, at meetings of this kind, to pass them by and say: 'Well, if the builders were a little better or if it was not for town planning, and so on, things would be different.' We can not pass on the responsibility in this way. I would much rather hear criticisms of architects and suggestions for overcoming our own inefficiencies.

Mr. Robert H. Matthew: Mr. Scorer, I presume, is asking the team how much importance they attach to productivity. The team was sent to America to discover how we could increase our productivity, and I should have thought that was some indication of how much importance we attach to it.

Mr. Scorer also seemed to imply that productivity and architectural quality might be mutually exclusive. Personally, I do not think that they are. I think that if we design for maximum efficiency we shall very likely produce a type of architecture that is of some value. I do not think that when the team went to America they had any preconceived ideas on architectural style or anything of that kind, and I do not think that anything like that appears in our Report. We were dealing purely and simply with efficiency, but I do think that if an architect starts from the basis of designing for maximum efficiency he will produce something that has some value which may or may not relate to traditional architecture.

Miss J. M. Albery [*A*]: I should like to endorse the remarks made by Mr. Scorer. I agree with him that the question of productivity has a bearing on the kind of building that is produced, because obviously our traditional type of building has been based on a low cost of labour, and, while probably certain buildings of public importance will always continue to be built in that way and of traditional materials, and probably not at the greatest speed or at the lowest cost, the profession is now faced with the tremendous task of trying to provide homes for enormous numbers of households. If we are to fulfil that task we may have to modify very greatly our conceptions of design and approach design from the angle of trying to secure a different range of building materials and probably a considerable reduction in the actual amount of material that goes into any building.

Mr. Michael Waterhouse: I think there is an answer to the question about the effect of productivity on architectural design, and it is this. With the exception of timber, which the Americans have and we have not, every material that is used in America is almost the exact counterpart of what we use here, and on all building, except

houses which are made of timber, the Americans achieve a high rate of productivity by the quick assembly methods which they use. Therefore you need not consider that productivity must entail a complete change in design.

Mr. B. J. Ashwell [*A*]: I think we must put our own house in order first. We rely at the moment far too much on our quantity surveyors. Those of us who are in practice will no doubt recall how often we have rung up our quantity surveyor and said: 'What did you take for so-and-so?' and in fact parts of our buildings are being designed by our quantity surveyors. I think it is absolutely vital that, as these Reports have brought out, more time should be spent on design and less on the actual job. The more time we spend on design the better the building will be.

I should like to ask whether the *ad hoc* Committee is going to give us, as practising architects, very definite recommendations about what we should produce for the builder. I tried to pre-plan a small housing site recently, and I got into such a lamentable number of half-inch details that I think the job shows a dead loss. Could we be given some recommendations? For instance, could we do with quarter scale what we now do in eighth-inch and half-inch? I think that we are apt to suffer from the old idea: 'One scale and one drawing'. We might very well do quarter scale drawings and supplement those by drawings with details to a larger scale, as I see is done in the case of the American drawings on exhibition here.

Also, can we do more ourselves to help the contractor? I am perfectly certain that we can. It is brought out in the Working Party Report and in the Productivity Report that the contractors do not get the information from us early enough. P.C.s are a dreadful snare and delusion. We have to be very careful about the use of them

Finally, I do not see how, even when we have put our house in order, we can ever hope to approach American productivity, because my experience is that building workers in this country are trying to get out of the industry, whereas workers in America are trying to get into it. This is a very serious matter in a state of full employment.

Mr. Michael Waterhouse: The last question I will leave to be answered by Mr. Beazley.

With regard to the first question, the *ad hoc* Committee has been in touch with the Practice Committee of the R.I.B.A. and we are hoping to produce the kind of instructions for which Mr. Ashwell has asked.

Mr. Francis Beazley: I was waiting for this question. I thought that it would have been brought forward before now.

You really get what you pay for in this world, and the Americans are prepared to pay for the best craftsmen that are obtainable. Nobody can hope in this country ever to attain the level of wages that the Americans have, because wages are obviously conditioned by the national resources of the country, and it is what is in the national exchequer that is passed round. But the fact remains that the building industry in this country has gone downhill somewhat since the 1930s, and there has been a tendency for people to go out of the industry rather than to remain in it. I think we have to do something to keep the people in the industry and to attract the better sort of craftsmen to enter it. That is essential if we are to build up the rate of productivity that we need, but it will be a slow process.

It is important to the operative that the organization should be right. I am convinced that that is the secret of American productivity. Why the Americans have the organization is another matter. I do not think they have it just because they wanted it; I think they have it because they had to have it. But I think that if we get the right sort of organization on our jobs in this country the operatives will give you the sort of productivity that you need. But you must get the right sort of men into the industry and keep them there.

Mr. F. Kerr-Lucarotti [*A*]: Mr. Matthew mentioned sash windows being received on the site already painted. I think that implies a very high standard of cleanliness and is due probably to a warm and dry climate and also a dry method of construction. I think it also implies a higher sense of cleanliness amongst the operatives. I have read that in America there is a very widespread use of gloves by people such as engine drivers, and I wonder whether the team saw the use of gloves to any large extent in the building industry.

Mr. Robert H. Matthew: I think nearly all the photographs show bricklayers wearing gloves. With regard to the windows, they were in fact painted with the exception of the fir ' coat. One thing which impressed us was the care which one contractor took of another contractor's work. The contractors did have some respect for the work that had already been put in the job.

Mr. P. H. P. Bennett [*A*]: I understood Mr. Waterhouse to say that it was not necessary for architects in this country to produce drawings quite as detailed as the American drawings on exhibition here. They are very similar to the sort of drawings that we normally provide on our own contracts, and I feel that that is the key to the success of British contracts. The bill of quantities is frequently referred to as a very important document, but it is surely only a means of tendering and a means of pricing variations. On the site in nine cases out of ten the bill of quantities is found to be of very little value to the men, because it does not explain to them where any of the material which is brought to the site must be put, and the specification and drawings give the vital information required to put the pieces together. I do think it is very important that we should increase the efficiency of the drawings and specification, and if possible we should reduce the bill of quantities to the absolute minimum, as a basis of tendering only.

With regard to the matter raised by Mr. Roberts, the Builders' Conference is in fact operating in London at present, and we have in our office, on larger contracts, made sure that certain of the contractors tendering are outside the Conference. We are now considering, because we understand that certain contractors are getting together and not pricing individual bills at all, that we shall have to demand all the bills of quantities from all the contractors, so that we can be sure that there is not only one priced bill among the lot.

With regard to Mr. Farrow's point on the question of nominated sub-contractors, the general contractor is, under the contract, responsible for the nominated sub-contractor, and I think it should be emphasized that he is responsible for organizing the sub-contractors and should not expect the architect to organize them for him. When you have appointed nominated sub-contractors, you generally explain to the contractor that he is responsible for the job of making out the progress schedule. He often does nothing whatever with the nominated sub-contractors; he does not progress their work and does not get into touch with them until you force him to do so. The general contractor leaves the architect to do all the correspondence with the nominated sub-contractors and then complains that the job is not properly organized. I think it is a very serious matter that when a contractor accepts a contract with nominated sub-contractors in it he accepts the responsibility for those nominated sub-contractors and it is his responsibility to organize them. If the contractor, having done all that he can, the nominated sub-contractors fail, there is a clause in the contract which absolves him from the actual responsibility, but he should make some effort to organize them in the first place, and the majority of contractors do not do so until they are forced to do so by the architect.

Mr. Michael Waterhouse: On the question of what I said about our drawings not requiring to be so elaborate as those of the United States, I do not want to be misunderstood. I am not trying to make an excuse for sloppy or bad drawings or drawings that do not contain all the information, but some of the sets of American drawings that I went through were so complicated that it took me a considerable time to read them. That is the kind of elaboration that I do not think we need have.

With regard to bills of quantities, I agree that their purpose is as a basis for tendering and ascertaining cost. I do not go quite so far as one architect, who said: 'I have another great use for the bill of quantities. When the client wants to know what the job is costing I send him a priced bill and it bamboozles him completely!'

I would emphasize the need and value of the specification. One of my own customs, which annoys my quantity surveyor intensely, is to have my bill of quantities and specification written as one document, the specification on the left-hand side being put against the item of the bill to which it refers.

Mr. Robert O. Lloyd, O.B.E.: With regard to the question of nominated sub-contractors, I believe that the great success of the American building industry lies in the fact that the nominated sub-contractor does not

exist in America. If the architect requires something of the kind, the contractor who is successful in connection with the tender gets the prices himself and organizes the work from the beginning. I believe that the separation caused by the nominated sub-contractor plays havoc with the organization in this country; instead of being closer together there is a tendency to break apart.

The President: I will now call upon Mr. Robert Lloyd, President of the National Federation of Building Trades Employers, who was the Leader of the Anglo-American Productivity Team, to move a vote of thanks to Mr. Waterhouse and Mr. Matthew.

Mr. Robert O. Lloyd, O.B.E.: There is an old Lancashire saying that you have to live with a man to know him and sleep with him to find him out. I do not claim to have found them out, but I can claim to know these two very prominent members of your Institute, who did a great job for this country in joining forces with the other members of the team. Since we returned to this country they have been tireless in propagating the lessons we learned, which are set out in the Report. At some inconvenience to themselves, they are now covering the country, and the Institute should be indeed proud of them.

A good many of the problems which beset our industry can be solved if we understand what they are, and one or two items which I thought might come out this evening have not done so. Let us understand, in the first instance, that in our country we have all agreed to the policy of full employment, but that plays havoc with the incentive for the individual, whether he be architect or labourer. The Americans have 99 per cent free competition and enterprise. The people who place orders for construction in the United States are for the most part (over 90 per cent) private building owners, and they place their orders in a market that believes in private enterprise and individual enterprise. In that case, as you will readily see, this force of the construction industry is fed at the rate at which it can digest its load properly. At the present time in our country we often find that our labour force is too thinly spread, and I believe that our architects' offices also are in need of a great deal of staff, so we can say that our labour load is too heavy. We could do our work better if we had less of it to do. We should be able to organize fewer jobs with greater success from the point of view of productivity. At the present time, as you know, in our country the vast majority of our orders come from the United States *via* the central Government or from the local authority machine, and decisions are taken many months ahead of actual construction commencing. In the United States the building owner after receiving tenders can withdraw from the market, as he invariably does if the prices do not suit him. In our country a school project, or whatever it may be, commences from the instructions and permissions at the higher level many months, and in some instances years, before the tenders are actually put into effect in the way of commencing the contract. That is one of the vital differences. We should have more competition and greater incentives. That is what we as employers are trying to get in the industry, and we sincerely hope that you agree with us.

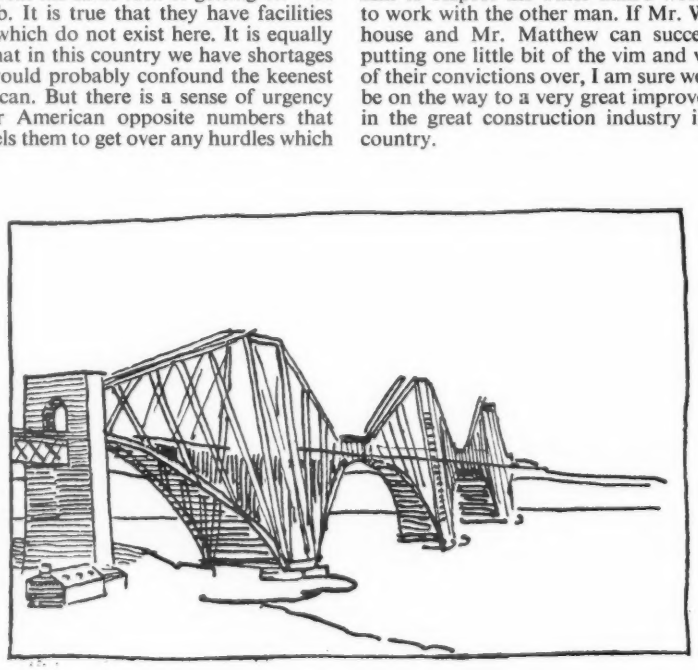
With regard to the vote of thanks that I am proposing, I would say that these Reports came upon us because the public were dissatisfied with our industry, as well they might be. We have many lessons to learn from the United States. We can not continue in the traditional way, as some of our friends here have rather inferred, when we know perfectly well that we shall never be able to find the money to house our people and to build schools unless we reduce the costs. It is on that note that I submit to you that we should give our heartfelt thanks to Mr. Waterhouse and Mr. Matthew.

The President: I will now ask Mr. Walter Cowen, President of the Federation of Associations of Specialists and Sub-Contractors, who was a member of the Anglo-American Productivity Team, to second the vote of thanks to Mr. Waterhouse and Mr. Matthew.

Mr. Walter R. Cowen: I feel it a great privilege to be allowed to second the vote of thanks to Mr. Waterhouse and Mr. Matthew. I have no doubt you will agree with me that they have very well earned a vote of thanks.

As has been said, the work of our team was carried out in a team spirit, and we saw evidence of the team spirit in the United States. The work there, from the architect to the labourer, is carried out by a team, all the members of which are imbued with the same idea of getting on with the job. It is true that they have facilities there which do not exist here. It is equally true that in this country we have shortages that would probably confound the keenest American. But there is a sense of urgency in our American opposite numbers that compels them to get over any hurdles which are in their way. We understood that two years before we went to America there was a grave shortage of materials there, but the Americans overcame that difficulty by the exercise of private initiative and enterprise. They did not want to be mollycoddled. They were not nursed by Government Departments or local authorities. They found other ways of overcoming their difficulties, and very quickly they got a full and free supply of materials, which enabled them to get on with their work.

I rose with some trepidation, as I represent an organization of specialists and sub-contractors, and you have heard a good deal about nominated sub-contractors tonight. It is true that the nominated sub-contractor, as we know him here, does not exist in the United States, yet many of the trades there are let directly by the architect, particularly where public funds are involved. In spite of that, there is the greatest comradeship and care for one another in getting the job done. One would almost think that there was no sub-contractor on the site at all. The work goes through expeditiously, and a matter of great interest to me and, I believe, to every member of the team was the care that every man had for the other man's work. It positively astounded me to see copper tubes and expensive fittings erected in steel frame structures and left to the care of others, who did not harm them in any way. I do not like to decry our own race and our own people, but I think he would be a fairly optimistic fellow who would dare to do the same sort of thing in most of the jobs in this country at the present time. Let us hope that we shall, through one means or another, educate every one of the members of our great industry, teaching him to respect the other man's work and to work with the other man. If Mr. Waterhouse and Mr. Matthew can succeed in putting one little bit of the vim and vigour of their convictions over, I am sure we shall be on the way to a very great improvement in the great construction industry in this country.



The entrance front and forecourt

The Assembly House, Norwich

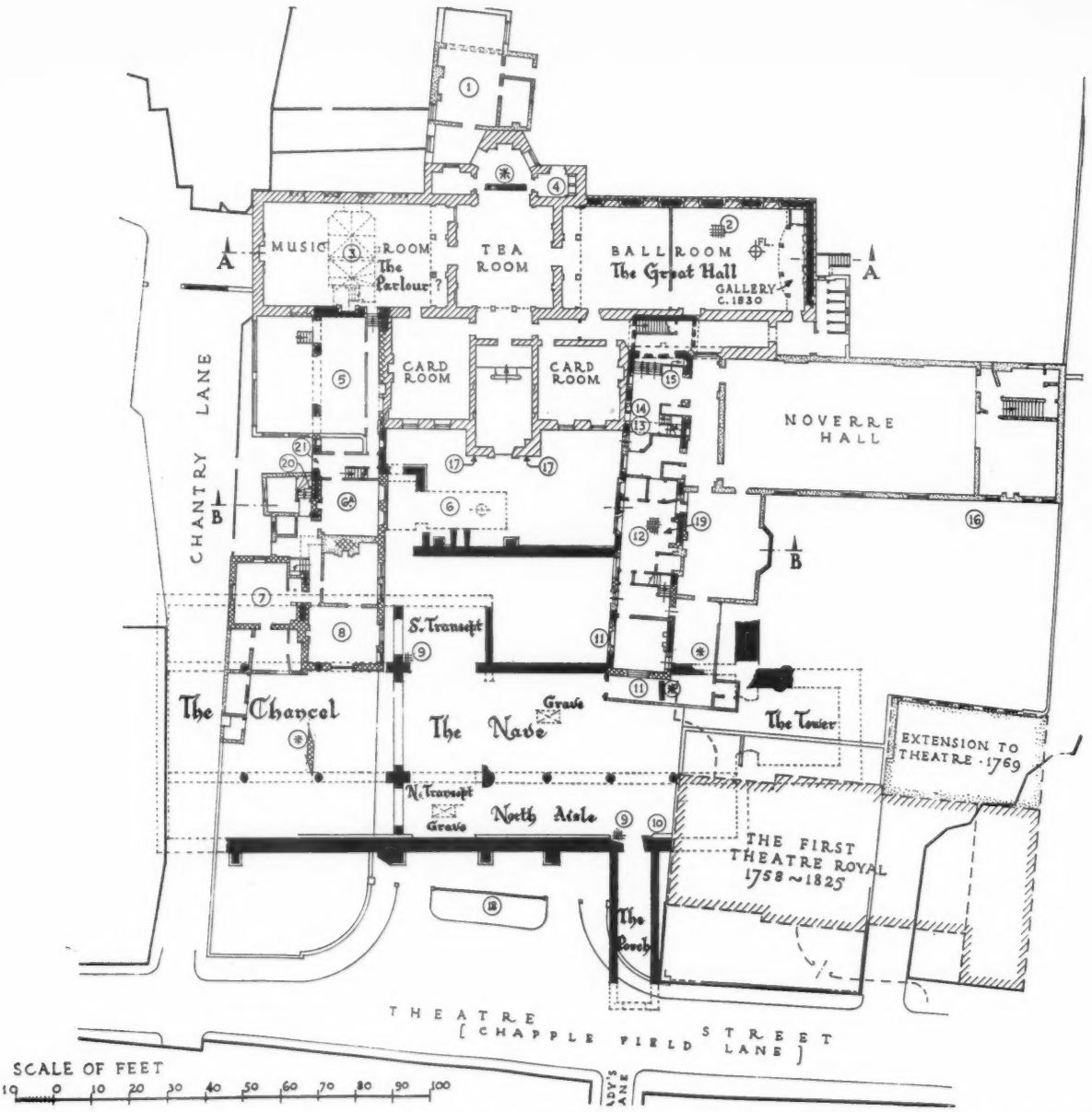
Architect: S. Rowland Pierce, Dist.T.P. [*F*]

THE MUNIFICENCE OF one of its citizens and the skilled transformation of a semi-derelict building has given Norwich an arts centre which other cities may well envy. Mr. Rowland Pierce's work is no mere restoration, though the 18th century rooms which form the heart of the scheme have recovered the gaiety they once must have possessed. Scholarship and a 'feeling' for Georgian architecture have been combined with a purposeful modernity, making the building of true contemporary use and not a museum piece fit only to be admired.

This building can be looked at in four ways. Historically it is the latest form of a building, originally medieval, that has been changed many times during the last five centuries; it is a piece of the history of Norwich and the central block is scheduled as a national monument. For those interested in the highly-skilled craft of restoration it is a triumphant victory in what Mr. Rowland Pierce described, in a lecture to the Norfolk and Norwich Association of Architects, as 'a battle with decay, dry rot, beetles, neglect and the blitz'. The connoisseur of Georgian architecture will admire the skilful and imaginative decorative treatment of the principal rooms. Those interested in the planning, functions and management of that essentially modern building—an arts centre—have here a prototype which they will find to be a useful study.

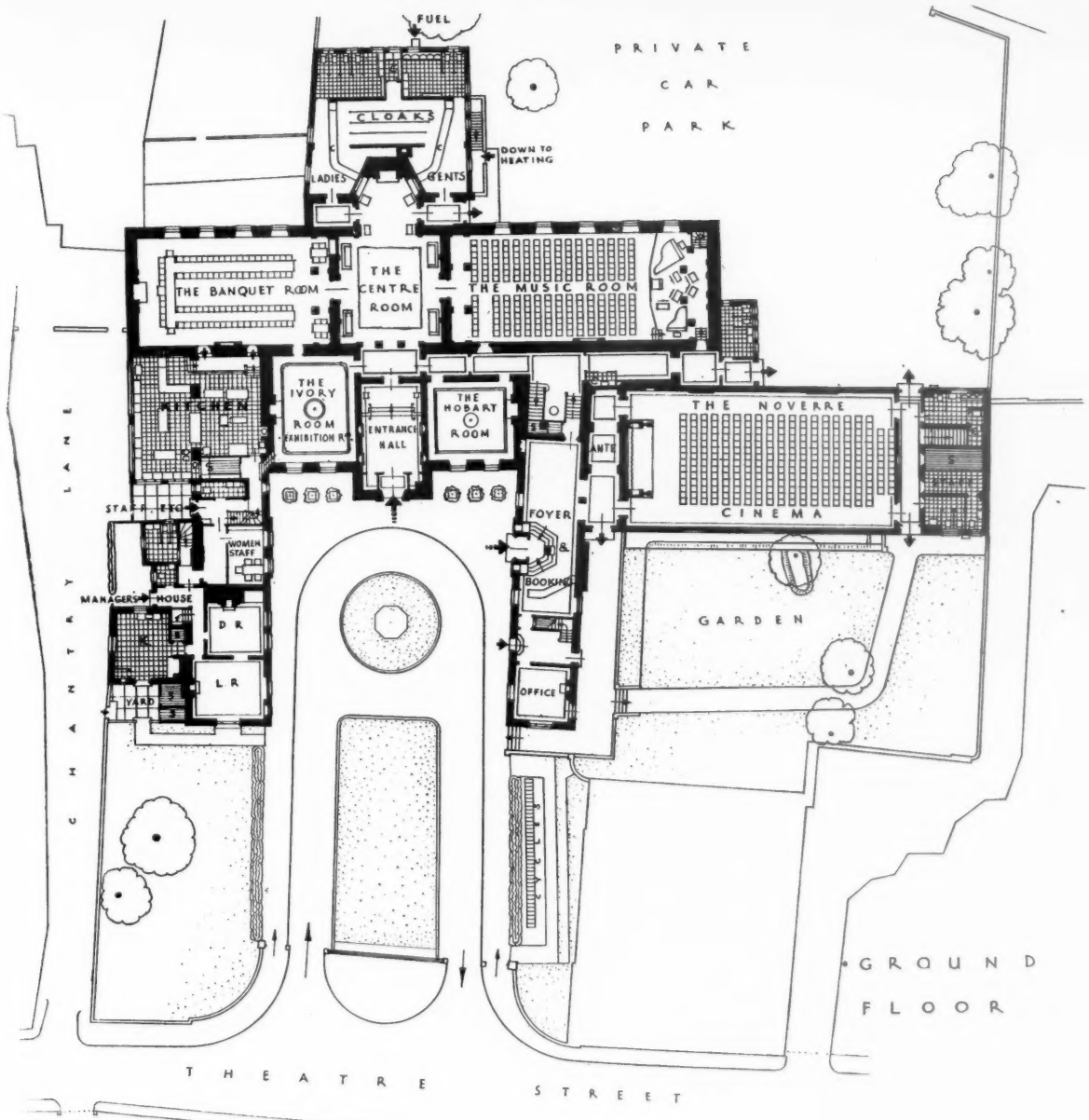
From a drawing made in 1828 by James Sillett (1764-1840)

The group of buildings which now make up the Assembly House began with the foundation on the site in the 13th century of the College and Hospital of St. Mary-in-the-Fields. The church was the largest in Norwich, with the exception of the cathedral. At the dissolution of the monasteries in 1544, the college buildings were turned into a house and the church and cloisters pulled down. Most of the surviving remains of the college and Tudor house are hidden beneath later additions or buried in the ground; cellars and a vaulted crypt still exist. After passing through many hands



'Historical' plan showing the succession of buildings on the site. *Key:* 1, The Steward's House, *c.* 1830, now demolished. 2, Tiles, in situ 5 ft. below existing floor. 3, Crypt, rib and panel vaulting, *c.* 1300. 4, The 'Tea kitchen'; flues found 1949. 5, Kitchen of Chapelfield House (?) vaults under. 6, Vaults under drive, connected with those under (5) and (6a). 7, Wing built about 1600. 8, Room with remains of oak panelling of *c.* 1600. 9, Floor tiles, in situ; found 1902. 10, Stone shield, a merchant's arms, found 1902. 11, Oak 'Tudor' windows, brick splayed surrounds. 12, Tiles, in situ, found 6 ft. 3 in. below; found 1949. 13, 'Tudor' doorway with heavy oak frame; found 1949. 14, 'Tudor' window, oak frame, etc. 1st floor level, built up by T. Ivory; found 1949. 15, Pointed niche, plastered, 1st floor level; found 1949. 16, Inscribed bricks; initials of Noverre family. 17, Various graffiti; initials and dates, from 1761. 18, Iron railings and gates, erected 1901. 19, The brewhouse (?), etc., of the College. 20, Window of reused stone. 21, Door; remains of stone jambs. *Indicates remains below ground, found or seen 1947-50.

and undergoing many alterations what had now become known as the 'Chapel Field House' was acquired in 1754 by a group of citizens as the nucleus of some 'Assembly Rooms'. Thomas Ivory, the Norwich master builder and architect, erected the present central block to make room for which the middle part of the old house was



The ground floor plan of the building as now reconstructed

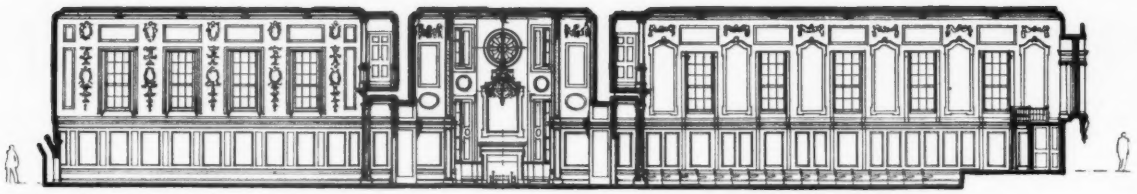
pulled down. The intended rebuilding of the wings was abandoned and they remain, much altered, until today.

The Assembly Rooms seem to have fallen out of use during the first half of the 19th century. Part of the building was used as a dancing school by the Noverre family, who helped to originate modern ballet in this country. They built the Noverre hall as a wing which has now been converted by Mr. Rowland Pierce into the cinema. Frank Noverre lived in the west wing until the start of this century. Some time after 1861 the building became the property of the Girls' High School. After the school left the premises in 1933 they were used as a warehouse or left empty and neglected.

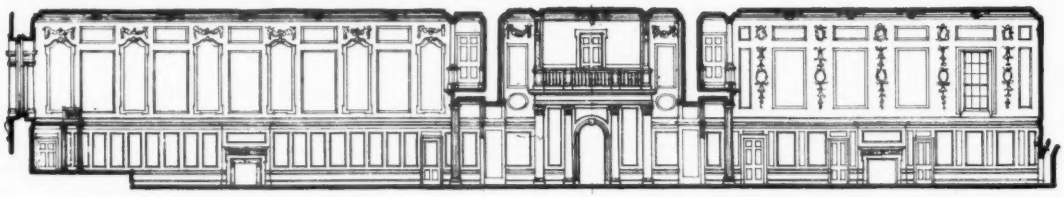
In 1938 the premises were bought by Mr. H. J. Sexton, the late Mr. A. R. Colman and the late Sir Ernest White. During the last war they were requisitioned for the Royal Engineers' School of Camouflage. Unexpectedly this proved fortunate, the building owing its survival to the extinguishing of numerous incendiary bombs by the soldiers and the preservation of its fine interior decoration largely to the fact that Mr. Oliver Messel, the stage designer, was a senior officer in the school. For once a building has benefited from military occupation.

After the war Mr. Sexton became sole proprietor of the premises which he has generously invested in an organization known as the H. J. Sexton Norwich Arts Trust, together with a sum of money to restore the building and to fit it for its new use. A building licence was granted mainly on account of the educational value of the proposed arts centre.

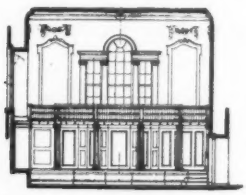
Mr. Rowland Pierce then started the delicate yet fascinating task of discovering



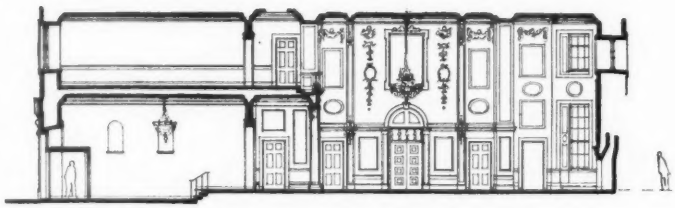
Section through main rooms looking south



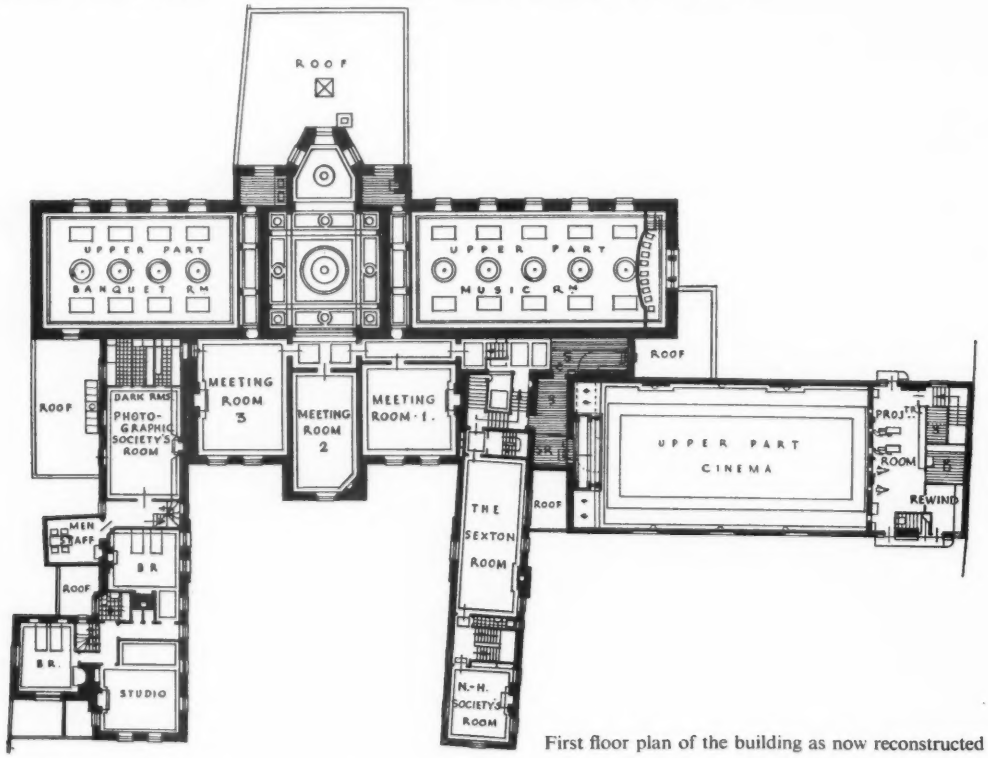
Section through main rooms looking north



Section of Music Room



Section through entrance hall and the Centre Room



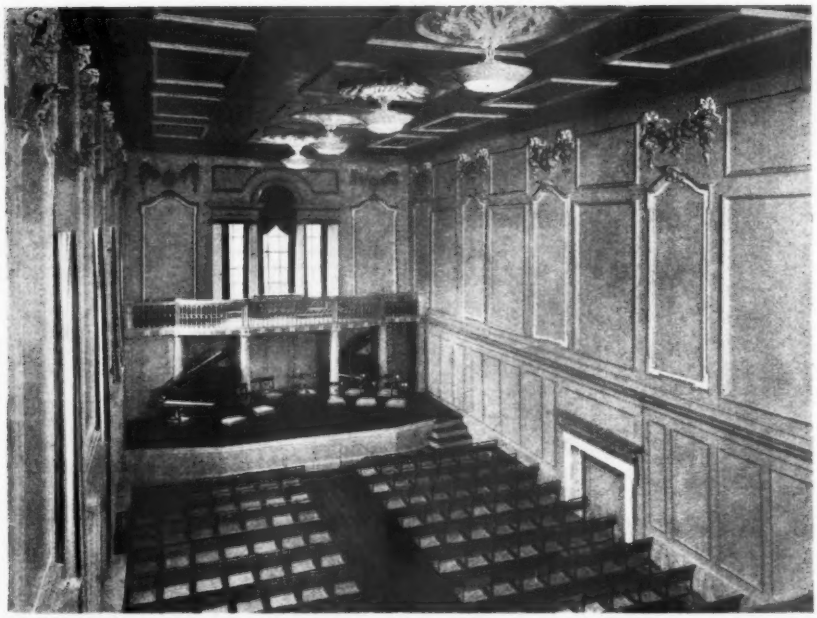
First floor plan of the building as now reconstructed

the condition of the structure and what lay behind the alterations and accretions of centuries. He seems to have found at least one example of every disease which can attack an old building, though the main structure was reasonably sound. Several interesting discoveries were made during the course of the work, including timber-work, floors and bricked-up windows and a piece of panelling with the original grey-green colour put on by Thomas Ivory; Mr. Rowland Pierce has used this colour in the redecoration of the three principal rooms. Modern lighting, heating and ventilation have been installed and a fully

On this page are three views of the Centre Room. Above, left, is the view from the doorway of the entrance hall looking towards the fireplace bay. Above, right, is the view towards the entrance hall with, on the right, the modern door to the Banqueting Room. Left is a view of the ceiling and gallery.

equipped kitchen, cloakrooms and lavatories provided.

The architectural heart of the whole scheme is the magnificent suite composed of the Centre Room, the Music Room and the Banquet Room. These three beautifully-proportioned interiors are the chief contribution of Thomas Ivory to the group. The sections on page 52 and the photographs on this page give an impression of their dignity and charm, though not of the delicacy of colouring that Mr. Rowland Pierce has given them, nor of their harmony of related proportions—a feeling that can only be experienced by walking through them. The approach up a few steps from the warmly-coloured entrance hall, through the doorway into the Centre Room, between the red painted columns until one comes to a halt on a lovely modern pastel-coloured carpet beneath an antique cut-glass chandelier (obtained by the architect with no small difficulty) is a fine architectural experience. Through the glazed doors on either hand can then be seen the long vistas of the two larger rooms, all decorated in Thomas Ivory's grey green, but with clever touches of colour which give warmth and sparkle to the whole. The period portraits which occupy the panels (mostly of 18th-century nonentities from the store rooms of Norwich Museum), the white painting of the recesses on the pilasters and panels (a personal 'trick' of Charles Cameron, architect to Catherine the Great, which Mr. Rowland Pierce admits to having 'borrowed'), the light brushing with gold of the tips of the high relief plaster decorations between the windows, touches of blue on the ceilings and the red columns are all examples of the sensitive use of colour to make gay and warm interiors which, in a uniform colour,



The Music Room. The general colour scheme is the same as that of the Centre Room. The relief plasterwork has been lightly touched with gold

The Noverre cinema, which seats 272, has been created inside the old dance studio, later the school gymnasium. The decoration is mainly pink and silver

might well have appeared rather cold. There is, however, no slavish adherence to the period; the new doors to the two larger rooms are modern, though simple, and the steel nesting chairs in the music room fit into the picture quite harmoniously. Over the fireplace in the Centre Room is a gilt Chippendale mirror—a gift from the Old Girls' Association of the High School and a memento of the school's occupation.

The Noverre cinema, constructed in the shell of the 19th-century dance studio, is wholly modern. Again, the photograph (above) gives no true impression of the charm of the interior, derived mostly from colour on simple forms. The cinema has its own entrance, made through what was once a kitchen in the west wing. A modern projection room allows for the showing of both full-size and sub-standard films and lantern slides.

Considered as an arts centre for an urban community, the whole group appears to have great possibilities, the new planning making possible a wide variety of uses and gatherings, large or small. The Music Room can be used for chamber concerts, receptions and dances. A new platform has been provided and areas of acoustic absorbent applied to the walls in a way that does not detract from the 18th century decoration. The Banquet Room is available for everyday lunches and light refreshments of all kinds as well as for full civic or other formal banquets. A modern, fully-equipped kitchen has been provided. These two rooms have been artificially lit by the introduction of high-level louvred fittings, from which the whole area of the room is flooded with light. All these fittings and the glass chandelier are on winches.

At one side of the main entrance is an exhibition room—the Ivory Room. This is likely to be much used for exhibiting the works of the many local artists who are the present-day successors of the famous 'Norwich School'. Balancing it on plan is the Hobart Room which can be used as a green room to the Music Room, as a rest room or for exhibitions.

The old building had a single poor staircase. In its place a new wide staircase has been provided linking up all the levels of the building and giving access to four meeting rooms on the first floor. These are available for use by the public or by any of the numerous societies and associations of the city and county. The largest room, on the first floor of the west wing, is called the Sexton Room. Two societies, the Norwich and Norfolk Photographic Society and the Norfolk Naturalists Trust, have already been allocated permanent quarters.

The Noverre cinema has 272 seats, all bookable, for two separate performances every evening. It will also be available for film society shows, for lectures and scientific meetings requiring films or lantern slides.

Externally the building has a simple charm, the view of it from the forecourt gates being specially attractive. The walls facing the forecourt are colourwashed ivory-white and the sash windows are painted off-white. Elsewhere the brickwork, as well as the tile roofs, are of that quality one expects in Norfolk. Those who are interested in axial planning may note that the obliquity of the approach, observable on the plan, is practically unnoticeable in the forecourt itself.

The scheme originally envisaged the provision of a new theatre on the land at the back which has now been laid out as a car park. This had to be abandoned because of the rise in building costs. It is a coincidence that exactly the same fate overtook an 18th-century theatre which formed part of Thomas Ivory's original scheme.

Mr. Rowland Pierce has been well served by his builder, Mr. Hugh R. Wilkins, of Norwich. He and his men not only took great pride in the work, but met the numerous contingencies which inevitably arise in the pulling about of an old building with skill, local knowledge and initiative. It is also noteworthy that the delicate 18th-century high relief plasterwork was very well repaired by local craftsmen.

ERIC L. BIRD

Sanitary Services: Their Effect on the Planning and Design of Buildings*

By F. L. Barrow, M.Sc., A.M.I.C.E., M.I.Struct.E., F.R.San.I.,
of the Building Research Station

Read at a meeting arranged by the Architectural Science Board, 21 November 1950

Leo M. de Syllas [*A*] in the Chair

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AS AN ENGINEER I can not hope to peer very deeply into the mind of the architect, but I will hazard a guess that when designing a building he wants it to look well; he wants to make efficient use of the space at his disposal; and he wants to use modern developments—in so far as his client can afford them and aspires to be in the van of progress. No doubt there are other considerations in the architect's mind, but I propose to restrict myself to these three because they affect the *plumbing*; and what the architect can do to the plumbing by forging ahead unmindful of its claims is the burden of my talk tonight.

Let me first reveal that the plumbing designer, too, has things in his mind; he wants the water supply and the 'sanitary' services to be efficient, and he wants them to remain so with a minimum of maintenance.

I propose to confront these aims of the architect with these aims of the plumbing designer, and see what happens. We may get a little mild entertainment out of this audacious procedure, but my objective is not primarily entertainment: I want, with your help in discussion, to achieve some sensible compromises, where we must compromise, and even rise here and there to solutions which give undiluted pleasure to both sides at once.

My first subject is the familiar one about putting the plumbing pipes inside the building. I imagine that this is a matter not unlikely to 'touch the spot' with an audience of architects. I have arranged my notes on this and some other plumbing features under headings like this: Introduction, The arguments 'for', The arguments 'against', What they do in America (and why), and Recommendations.

1. Internal Soil and Waste Stacks

Introduction. I wish people would not say in such a general fashion, 'Why do we not put the plumbing pipes inside?' We *do*, except for soil, waste and rainwater downpipes and very short branch connections to them. Completely internal plumbing is the general rule in some other countries, and in this country in our large modern buildings we often do bring soil and waste stacks inside. But why is it otherwise general practice in British plumbing to put them outside? Let us examine the arguments for and against.

The arguments 'for'. I can quote two arguments in favour of internal stacks. They are: (*a*) improved appearance of external elevations; and (*b*) good taste. I am not quite sure about this point, and would like to have it raised in discussion. As a sanitarian I am not so likely to feel, as others might, that the external exposure of soil and waste pipes is perhaps a little indelicate. Is this so? If it is, it may be significant that there is much less objection to *rainwater* stacks showing on the elevation. Admittedly, these can be made to look quite pleasing—I believe 'architectural feature' is the phrase—but could not soil pipes be made to look just as attractive?

The arguments 'against'. There are several good reasons why we have been using external stacks. They are: (*a*) Cost. Undue cost delays the spread of good sanitation. When internal stacks are used cost tends to rise because space has to be allotted for these pipes within the building, they may have to be cased-in for the sake of appearance, which has to be paid for, and the pipes used may have to be of higher quality than would suffice externally.

(*b*) Risk of leakage. Two points to make here are: plumbing labour in a given area may not always be good enough for complete safety with internal stacks, and if leakage should occur inside a casing it may be some time before the defect is noticed—which aggravates the risk.

(*c*) Planning. Internal stacks do not present any particularly serious planning problems in one-storey buildings. Nor do they in multi-storey buildings where the rooms containing plumbing are one above the other. However it may be awkward in *two-storey houses* to accommodate an internal stack. It is very common in such buildings to have the bathroom over the kitchen, and this is good planning from various points of view. But how, if the soil stack is to be internal, do you bring it down satisfactorily through the kitchen? I think that a number of attempts to use internal stacks in two-storey houses have been abandoned in face of this difficulty.

American practice. Just a word here as to why it is general practice to use internal stacks in America and some other countries. It is, in general, a matter of climate. Where winter temperature drops very low and remain so for long periods there is really no choice as between internal and external stacks; they must be internal or freeze up. It should not be assumed that in such countries they never get any leakage from their internal soil stacks; they do. But the safeguard employed by us of putting the stacks outside is not available to those countries. The temptation to save money on low-cost work would probably be just as irresistible to them as it is to us if they had our peculiar kind of climate; and it is significant that in very cheap housing in the southern parts of the U.S.A. external stacks are not unknown. There is another factor in America which is favourable to the general use of internal stacks; they seem to have more one-storey houses in proportion to two-storey than we have, and as I have already suggested it is easier to arrange internal stacks in one-storey than in two-storey houses.

Recommendations. In tall, multi-storey buildings (flats, hotels, office buildings, etc.) the arguments for internal stacks generally outweigh the arguments against them, because cost is not so critical, labour is usually more reliable and one can expect maintenance. Also, the usual types of planning of such buildings are favourable to internal stacks since it is advantageous on other grounds to superimpose the rooms containing the plumbing services. But in low-rent two-storey housing, for reasons I have given, the arguments against internal stacks usually overbalance the arguments for. There are, of course, borderline cases, and there one has to arrive at a reasonable judgment after considering the contributing factors of cost, leakage risk and planning.

A related subject. I would like to mention here another feature of plumbing which is related in a way to internal stacks. It is that of warning overflow pipes, to which some architects object on the score of

appearance on the elevations of buildings and the cost of carrying such pipes internally in a tidy manner from storage or flushing cisterns—especially when these cisterns are located well away from the external wall. The case for requiring that all overflow pipes from cisterns shall discharge conspicuously on the external elevation will be admirably put to you by the various water undertakings in districts where they are short of this valuable fluid. It is a matter of common experience that users will let water run away from an overflow pipe internally, provided that it does not make a mess, but will be touchy about a constant cascade outside—and so will the water undertaking's inspector. I shall be returning later to the water undertakings' viewpoint about waste of water; but at the moment, as a recommendation on warning overflow pipes, I would suggest that these be considered essential where water is short.

2. Concealment of Pipes within Buildings—Generally

Introduction. In this subject, as with all the others, there are several considerations to bear in mind when trying to reach conclusions. In this case, one has to think of the class of building, whether office building or small house, for instance; the method of concealment, in cupboards, behind panels or built-in; the direction of run of pipes, vertical, inclined or horizontal; and the external size of pipe and its connections, comparing, for example, cast iron spigot and socket pipes with light-gauge copper pipes.

The arguments 'for'. The arguments for concealing pipes rest on: (1) appearance, especially where pipes are of relatively large diameter and not vertical. In this connection note that the amount of 'non-vertical' pipe run in a building depends very much on the location of the plumbing appliances relative to one another. (2) simpler cleaning of rooms when pipes are not exposed, and (3) possibly some reduction in plumbing noises.

The arguments 'against'. The arguments against concealment of pipes are: (*a*) cost in materials and space occupied within the building; (*b*) risk of vermin infestation. This normally applies only in buildings where there are definite attractions to vermin in the shape of food and good stuff to gnaw at. The risk of vermin infestation has to be assessed in terms of the likely use of the building in question. But remember that sanitary inspectors have had bitter experience of vermin infestation in old houses built in bygone days when it was the custom to box in all the plumbing; and (*c*) delay in detection of any plumbing defects, such as leakage of foul air or foul liquids from soil and waste pipes and water from water supply systems. Delay in spotting defects may aggravate considerably the damage and sanitary nuisance or danger to health. In this connection note the advantage of concealing plumbing pipes within cupboards which will be opened from time to time instead of fixing them behind screwed-up partitions or building them in.

American practice. In the U.S.A. they do more concealment of pipes in housing than we do, but note that they have simpler water supply lay-outs than we have, for reasons to be discussed in the next section of these notes; they often make use of partition walls of timber construction, which provide a convenient space for plumbing pipes between the studs; and they can use their basement ceilings for pipe runs. The use of basements in American houses is wrapped up with their special methods of heating—to suit their particular climatic conditions. It should not be assumed, however, that one never sees exposed plumbing pipes in the American low-cost house: one does.

Recommendations. Every effort should be made to conceal plumbing pipes, but in low-cost housing this should preferably be done by running the pipes through cupboards, as far as practicable, instead of behind screwed-up panels. There is obviously a good case for complete concealment of pipes in large buildings, e.g. hotels, because the objections as to cost and the risk of vermin infestation have not the same weight, and there is more prospect of periodic inspection. In addition, it is easier in such buildings to achieve a more compact plumbing lay-out, which makes the concealment of pipes within ducts more practicable. Once again it is a matter of balancing 'for' with 'against' according to the type of building.

3. Water Taps Supplied from Main Service Pipes instead of from Storage Cisterns

Introduction. In domestic plumbing the taps to consider are the cold water taps to the baths, basins, sinks and flushing cisterns, and the hot water taps to the baths, basins and sinks. In practically all districts in this country the cold tap to the sink is on the mains, and in districts where water is plentiful we often find the bath, basin and flushing cistern on the mains as well. As for the hot supplies, it is normal practice in this country to feed the hot water storage tank, which supplies the hot taps, from the cold water storage cistern. The questions at issue are: Why not connect cold taps in all cases to the rising main, and why not have mains supply direct to the hot water system?

The arguments 'for'. Firstly, it would obviously save in pipe runs and cisterns to take all cold services off the rising main. Secondly, it would eliminate any possibility of contamination of cistern water.

The arguments 'against'. In many areas, e.g. London, limited water supplies make it essential to use cold water storage cisterns for reserve purposes. Without them many buildings would lack water at times of peak demand. It follows that most cold taps must be fed from the cistern, leaving the cold tap at the sink to provide mains water for drinking. Another reason for distributing most of the water at cistern pressure in water-short areas is that there is less wastage of water from leaking taps on low-pressure supply.

You may not be very satisfied with these explanations and feel that we should not be so short of water in this rain-swept country. The answer lies with the Ministry of Health and the water undertakings, and when you have heard all they have to say you are less inclined to 'shoot the man at the piano'. There is plenty of action going on towards getting more water, but it is a long and expensive business—not only to get more raw water but to treat it and to distribute it through underground pipes in already built-up areas.

On the question of putting hot water tanks on the mains one should notice that if this is done the usual expansion pipe has to be omitted and, in consequence, the risk of a tank bursting under steam pressure becomes greater.

Cistern-fed fittings, especially ball-valves, are usually quieter than those fed from mains, although one day we hope that fittings will be developed which will be practically silent at all pressures.

If back-siphonage should occur on a piping system any pollution drawn in thereby is more widely spread when all the taps are on the mains.

American practice. In America they have the 'all-mains' system, but note that they have more water on hand than we have and do not therefore have the same need for storage cisterns, and the disadvantages which I have quoted regarding risk of bursting of hot water tanks, noise and increased back-siphonage risk are by no means absent in America.

Recommendations. No change in existing practice in this country while the present conditions obtain.

4. One-Pipe Plumbing

Introduction. One-pipe plumbing, as you well know, is the system of conveying soils and wastes by means of a common soil-waste stack. This system is practically universal in the U.S.A. and some other countries, but it is not much used in our own country except for the larger buildings. You may wish to know why not. You may also want me to comment on the 'single stack' system, which is the one-pipe system without special trap ventilation.

The arguments 'for'. The arguments for one-pipe plumbing are cleaner disposal, because of the flushing of soils by wastes in the common stack; less pipework, in some cases; more compact lay-out, at least when internal stacks are being used; and the opportunity in some cases to secure cheaper and more efficient underground drainage, particularly a saving in manholes.

The arguments 'against'. First let us consider the first two arguments 'for'. The 'cleaner disposal' argument is only really valid where two-pipe installations do in fact suffer from stoppages; and many such systems give no trouble in this way. On the question of economy in pipework this depends partly on the amount of trap ventilation required; it may be true for large installations but not necessarily for small ones.

However, the major arguments against the one-pipe system for general use rest on costs. The one-pipe system may be more costly than the two-pipe system when the general plan of the building is not favourable to the one-pipe arrangement. There

are often very good reasons, from the planning standpoint, for using a disposition of plumbing appliances which does happen to suit one-pipe plumbing. This applies mainly to the smaller buildings, e.g., houses; in the taller buildings it is usually good general planning to superimpose the rooms where plumbing is required, and this makes it easier to use the one-pipe system.

The reason why, in the smaller buildings, the one-pipe tends to be more costly than the two-pipe system has to do with the fact that in the one-pipe system greater precautions are taken against the unsealing of traps under basins, baths, sinks, etc. This is because in the one-pipe system the water seals in these traps constitute the only line of defence against drain air entering the building through the appliances, while in the two-pipe system there is a second line of defence in the form of the trapped gulley. Precautions against loss of trap seal consist mainly of anti-siphonage ventilation pipes and these may complicate the pipework considerably. Hence if these ventilation pipes are fitted to every trap in a one-pipe system in a one-storey or two-storey house, the cost of this type of plumbing may be high compared with that for the more conventional two-pipe type of installation, which, in such buildings, rarely has anti-siphonage pipes. Research is going on to determine the minimum requirements for trap venting and this may lead to less conservative, but equally safe, practice which will cheapen one-pipe design. On all questions of comparative cost of the two systems, however, one must not ignore the important point, made in the 'arguments for', that one-pipe plumbing may cheapen the underground drainage.

I would like here to insert a word of warning about the 'single stack' system—a method which is based on the assumption that if you put your plumbing fixtures very near to the common waste-soil stack, and perhaps use large-sized branch pipes, all the anti-siphonage ventilation required is provided by the stack itself. I would agree that this has worked out satisfactorily in certain cases, but it is dangerous to assume that the single stack system can be applied generally. The correct procedure at the moment, if you want to use the single stack system, is to build a prototype and test it thoroughly for loss of trap seal; reproducing exactly the conditions which may occur in service and repeating every test several times to make sure.

American practice. I have already mentioned that one-pipe plumbing is practically universal in the U.S.A. and some other countries; but this is tied up with the use in those countries of internal soil stacks, because when you *must* have internal stacks the one-pipe system usually becomes more practicable from the economic standpoint.

Recommendations. No significant change in our present practice until research supplies data for more efficient design of one-pipe systems.

Related subject. A subject related to the one-pipe system is that of resealing traps. Traps have been produced and used which aim to preserve the seal without anti-siphonage ventilation pipes, and these are therefore attractive to designers. However, the official view in this country and the U.S.A. is not in favour of these devices, except in special cases, on the score that they tend to accumulate solid deposits and thus choke up. My recommendation is therefore that we should not rely on resealing traps as a general alternative to anti-siphonage vent pipes.

5. Underwater inlets to Plumbing Appliances

Introduction. One example of a potential underwater inlet is when a tap has a hose extension which may be left lying with its outlet under the surface of waste water. Any temporary establishment of negative pressure in the supply lines may tnen suck back pollution into the general supply. Other examples are when water supply inlets on basins, bidets, drinking fountains, etc., are below the spill-over level of the fixture and so introduce the risk of being submerged from time to time, with the same risk of back-siphonage pollution.

People vary in their outlook towards back-siphonage pollution. Some think that all our appliances and fittings which make back-siphonage possible should be corrected in the shortest possible time; some think we should go easy on this, because of the cost of the changes; some think we should accept the risks without worrying too much about them; some refuse to believe there is any risk at all, and some just do not know what you are talking about. The subject is too complex for proper treatment as one item in my present analysis, so I will just deal with it very briefly.

The arguments 'for'. Potential underwater inlets are sometimes essential to the purpose of certain fitments, e.g., hose attachments for sundry uses. In the case of hot water taps they reduce steaming—during the filling of a bath, for instance. And it may sometimes be cheaper to install plumbing which has back-siphonage risk than to modify the installation to obviate this risk.

The arguments 'against'. The argument against potential underwater inlets, when they constitute a risk of waste water back-siphoning into the drinking supply, is obvious; they are a hazard to health.

American practice. There has been, and still is, more risk of back-siphonage pollution in American plumbing than in British plumbing. Exactly why this is so would take rather too long to explain at this juncture. The Americans have been taking active steps, in their plumbing Codes and Specifications and in other ways, to reduce existing risks and to prevent them arising in new work.

Recommendations. With certain exceptions there should wherever possible be an air gap between the orifice of a tap or other water discharge fitting and the spill-over level of the appliance which it serves. The exceptions are when the water pipe system is one in which no negative pressure can possibly occur in the supply line, and when there is no risk of anyone drinking water from the system concerned.

6. Flushing Valves in place of Flushing Cisterns

Introduction. A flushing valve is a type of tap designed to discharge a fixed quantity of water to a w.c. pan, or similar fitment, when the user presses the handle. It is used a good deal in the U.S.A., for large buildings, and to a much smaller extent in this country.

The arguments 'for'. These are:—it has a neat appearance; it can be operated a second time immediately, and some claim that flushing valves are more reliable in operation and in flushing effect.

The arguments 'against'. Firstly to reply to the arguments 'for'. Some would maintain that the modern low-level flushing cistern is quite nice enough to look at. The advantage of being able to flush again immediately is viewed with alarm by water undertakings, who see in this just one more way in which the public can waste water. As to being more reliable, it does not seem that the incidence of trouble with good-quality flushing cisterns is any greater than with comparable flushing valves. The claim of greater effectiveness of flush is perhaps unfounded; given the same amount of flushing water at the same rate of discharge the clearance depends on the design of the pan. The claim about superior clearance of pans probably arises from some people's experience of the good clearance of valve-flushed w.c. pans in America, but when these are using 6 gallons or more per flush it is not fair to compare them with British cistern-flushed pans using only 2 gallons.

To come to the major objections to flushing valves, some water undertakings who have little water to waste do not like flushing valves because if they develop defects they may easily exceed the stipulated amount for flushing, with little or no check on the waste. Note that the flushing cistern, if it becomes defective, is unlikely to discharge more than the correct amount; and it has a warning overflow pipe through the external wall of the building, which a flushing valve has not.

For security against back-siphonage hazards, as well as prevention of waste of water, water undertakings commonly require flushing valves to be served from separate storage cisterns, and this may make the installation of flushing valves more expensive than flushing cisterns—in the average case.

The American practice of putting flushing valves on the mains is considered by water undertakings in this country to be too risky, and with this opinion I heartily agree. It is true that in good modern American practice a type of non-return valve, called a backflow preventer or vacuum breaker, is attached to the flushing valve, but we do not regard this as 'hundred per cent. protection' over long periods. No water undertakings in this country, to my knowledge, permit flushing valves on the mains.

American practice. I have already referred to American practice with flushing valves, but I might add here that it is wrong to assume that they are *universally* used in the U.S.A. They do not, I think, use them very

much for the smaller houses, because it means installing a 1¼ in. service pipe to give the required rate of flow.

Recommendations. Use flushing valves if you wish in buildings with private supplies, e.g., wells, and for large buildings where the water undertaking can permit them, having ample supplies of water on hand. Always feed flushing valves from (separate) storage cisterns, never from the mains.

7. All-In Prefabrication

Introduction. By the title 'All-In Prefabrication' I refer to various ideas, not so popular now as a year or two ago, for bringing the plumbing into the building in 'one big box-of-tricks'.

The arguments 'for'. It seems a tidy way of doing it and removes all plumbing to the workshop.

The arguments 'against'. The cost of 'all-in' prefabricated plumbing seems, on the face of it, to compare unfavourably with more conventional methods of installing plumbing when one takes account of the cost of framing the assembly for support in transit and transporting the heavy and bulky unit to the job and handling it into place. There is also likely to be some restriction in planning, because of the rigid control which the 'all-in' unit tends to exercise over the location of the plumbing appliances in the building.

Recommendations. When there is a good case for prefabricated plumbing use the partially-prefabricated method i.e., site assembly of specially prepared shop-made units of a size convenient to handle.

8. Plumbing Lay-out

Introduction. My intention under this heading is to present to you the plight of the plumbing designer when the architect marks in the plumbing appliances on the building plan without proper regard as to how the pipes will have to run to join up the appliances to the water supply and to the drainage system. In this connection we shall discuss the location of baths, linen cupboards, sinks, pipe ducts and cold water storage cisterns. We shall also think about the position of ventilators relative to plumbing pipes and fittings. And, finally, we shall consider the effect of general planning of buildings on the lay-out of the drains.

The arguments 'for' i.e. for the practice of 'leaving it to the plumber'. The advantages are freedom in general design and in the allotment of space for the various purposes. I do not put up this argument for the pleasure of trying to knock it down. I have every sympathy for the architect faced with his difficult task of trying to get everything perfect at once.

The arguments 'against' i.e. against the practice of not taking full account of the plumbing problems in the general design of buildings. I will put the following points, under their appropriate headings:—

Baths. If you locate the tap end of a bath against an external wall it creates difficulties of access for the plumber and a possible frost hazard.

General note on access. Poor access for the plumber means more costly installation and, perhaps, inferior work because of the added difficulties. Similarly it adds to maintenance costs; and note that a job made more difficult to do is more likely to need maintenance.

Sinks. In specifying sinks with pillar taps consideration should be given to access to the back-nuts of these taps; and when sinks are on an external wall note that if water pipes are to be fixed to this wall the frost hazard needs watching.

Linen cupboards. When marking the outline of a linen cupboard on the plan, careful thought is needed to make sure that it can properly contain any plumbing components which may have to be installed within it, e.g. a hot-water tank, and perhaps a cold-water storage cistern, and the pipes thereto. The size of the hot-water tank is controlled by the needs of the building, and the user will suffer if the tank is too small. The size of a cold-water storage cistern has to be such as to satisfy the water undertaking. The space around the tank and cistern within the cupboard needs considering in the light of the amount of room required to accommodate bends, T-s and stop valves and to give the plumber proper access for making connections and fixings. It must be remembered, too, that one may not have complete freedom as to where one connects the pipes to the tank and cistern; the new British Standards for tanks and cisterns specify the correct positions for these connections. So we see that it is difficult to decide upon the correct minimum size of your linen cupboard, if it has to contain plumbing components, without studying the plumbing requirements rather carefully.

Pipe ducts. I have known vertical ducts to be sited on the building plan in the hope that most of the plumbing pipes can be run within them. Perhaps I am being too simple in pointing out that this can not be done unless the appliances are very closely grouped around the duct and, in any case, there must be some horizontal runs which can not be within the duct.

A special point which seems worth mentioning relates to rising mains. You may have in your plan a vertical duct located fairly centrally in the building and have an idea of carrying up the rising main within it, perhaps as a protection against frost. If so, note that if there is a long horizontal run of service pipe within the building, under the ground floor, to reach the duct, there may be a problem of access to this horizontal pipe in the event of leakage.

Cold water storage cistern in the roof space. I do not regard the roof space as a very good place for a cold-water storage cistern, though I recognize the temptation to put it there. If, however, this location for it is chosen, note the need to consider whether sufficient space has been allowed for the cistern and the pipes; whether any of the pipes would have to run too close to the under-roof surface, and whether the cost for adequate protection against frost is not being made excessive by putting the cistern in the roof space. This is too often ignored when the cost of putting it somewhere else is weighed up.

Ventilators. Note the frost hazard when ventilators in a w.c. compartment are in close proximity to the flushing cistern and the supply pipes which must run to it. Consider also the same kind of problem in other parts of the building, where it may be easier to change the position of the ventilator than the plumbing pipes.

Drainage. A building plan may be such as to necessitate long runs of underground drainage pipes, and perhaps several manholes, to get round to the correct position for running to the sewer. Such a plan may not only add appreciably to the cost of the drainage system, but may also reduce its efficiency.

Recommendations. I do not need to tell my present audience that planning has to be a rational balance of many requirements, so that it can only at best be a compromise. But I suggest that architects might sometimes more deliberately include plumbing and drainage in their long list of considerations when planning and designing buildings.

This brings me to the end of my notes on some of the features of plumbing which tend to raise differences of opinion between architects and sanitarians. They have been presented to you in somewhat contentious form with the object of raising discussion. I hope you will allow me to qualify certain of my remarks in the course of the discussion because it has been impossible, in dealing so sketchily with many matters, to give the whole story in each case.

Appendix. The Architectural Science Board Lectures Committee have asked me to add a few words to my paper on water piping design, with the idea that architects might possibly do their own calculations for pipe sizes in the case of fairly simple installations for schools, etc. I must say at the outset that I think this is a job for the specialist, even in so-called 'simple' cases, just as tricky in its way as the design of a one-pipe disposal system, which I do not think most architects would regard as within their province. In support of this contention I will present to you a brief account of what water-piping design entails, as I see it.

Determination of total head of water available. In the case of supplies directly from the mains the head in feet is about 2.3 times the mains pressure in pounds per sq. in. When you know the mains pressure at ground level in the district concerned, deduction must be made for height above ground to the draw-off taps. Note that there are often substantial pressure fluctuations during the 24 hours.

In the case of cistern supplies the total head available is obviously the difference in level from cistern to tap. It is common to measure from the bottom of the cistern, since the level may fall at times of heavy demand. Remember that one of the reasons for using cisterns is to provide for conditions under which demand in the buildings temporarily exceeds the supply from the mains, so some drop in the water level in the cistern at times must be anticipated.

Determination of head causing flow. Having decided upon 'total head' it is necessary to take into account the head lost in friction to get the head actually causing flow—on

which the hydraulic calculations depend. Friction head for straight pipes can be calculated from simple formulæ if you know the diameter and length of pipe and a factor for the roughness of its inner surface. Head lost in friction at bends, T-connections and in valves and taps has also been recorded. The work of calculation can be simplified to some extent by the use of graphs. The real difficulty, and the need for some knowledge and experience, lies in choosing the constants for the roughness of the pipes and in making proper assessment of the real head loss in fittings. There are plenty of figures relating to material and age of pipe and to typical fittings, but these figures have rather wide ranges of values. The temptation is to pick up these constants from the first book or article that comes into your hands and then sail away happily into your calculations without enough regard for the sandy foundations on which you may be building, to mix metaphors.

Determination of diameter of pipe to pass the amount of water required per minute under the head available to cause flow. A simple formula ($v = \sqrt{2gh}$) connects velocity of flow with head and acceleration due to gravity (32.2 ft./sec.^{2}) Given v, you can obtain the rate of discharge through a pipe of diameter d by multiplying v by $\frac{\pi^{d2}}{4} \cdot \frac{\pi^{d2}}{4}$ is the cross-sectional area of the pipe. Graphs have been prepared on the foregoing basis from which the diameter of a pipe to pass a given discharge under a given head causing flow can be read off.

The procedure is fairly straightforward for a single pipe. The real fun begins when you have a branched pipe system, because here the flow through any one section of the system may be affected by the pipe diameters and friction losses in the other sections. The calculations may be lengthy, though steady plodding gets you there in the end—if you are good at calculations. Approximations have been devised to reduce the amount of calculation and yet give you results good enough for practical purposes. For these approximations I must recommend a study of books and articles which deal with this particular matter.

Determination of flow required to supply the various fittings in the building. You will have noticed that so far we have assumed that we know the rate of flow which we require to pass through the various pipes. But now we have to give some thought to this. Flow requirements are obviously controlled by the demand for water at the taps which serve the various plumbing appliances in the building. The amount of water required to run per minute varies from about 1 gallon for a flushing cistern feed to 8 gallons for a (public) bath. The figures assumed in practice for the various appliances are not very precise, and different authorities seem to have different ideas on the matter. For example, some quote 1 gallon per minute for a lavatory basin, and others 2 gallons per minute; and the range for domestic sinks is 3 to 4 gallons per minute. However, when you have made your own choice in this matter, according to the requirements in your building, it is just a matter of arithmetic to find the required discharge rate along any pipe serving a number of specified appliances.

The last headache for the designer of water supply systems—or at least the last one which I will inflict upon you—is known as the Simultaneous Demand Factor. This arises quite naturally from the fact that in a building only *some* of the taps are usually running at any one time so that you can not design efficiently by simply totalling up all the individual demands for the taps in question and then arranging that the supply pipes shall be the right size to deliver this total quantity. To do it this way would often mean using pipes appreciably larger than those actually required, and this would be wasteful. The Simultaneous Demand Factor is simply the ratio of actual usage of water at taps at peak demand periods to the total draw-off if all taps were running together. If you have this factor for every case it is plain sailing to modify your totals appropriately. But of course the rub is in deciding upon the Simultaneous Demand Factor itself, which varies for different classes of buildings and even perhaps for different parts of the same building. The Factor may be anything between 0.2 and 1.0. The lower values relate to cases where there are many fittings being served through the pipe in question, and where the demand is spread evenly over the day. The higher factors apply to buildings with high peak demands, i.e. where a lot of people in the building are all using plumbing services together at certain times of the day.

I am not sure that your Committee will thank me for the way in which I have felt obliged to answer their request to deal with this special additional subject, but I hope I have done my duty in pointing out that the design of water distributing services for buildings, even in what seem to be simple cases, has its complications, and that quite a lot of practical experience and special knowledge is required to avoid the hazards of incorrect design. I will conclude with a list of the unfortunate results of not doing this job properly. They are (*a*) insufficient flow at taps, (*b*) starving of taps by others on the same system, (*c*) air lock due to intake from taps which are being starved of supply, (*d*) additional back-siphonage risks in such cases, (*e*) undue cost in the event of pipes being over-sized, and (*f*) waste of water if pressure behind taps is unnecessarily high.

Discussion

Mr. J. Croft (Chief Inspector, Public Health Department, L.C.C.): I think the most encouraging sign of the times is to get the Department of Scientific and Industrial Research prepared to make investigations in connection with the problems which confront the sanitarian. The author tonight has certainly carried us a stage further in connection with this subject of sanitary services by providing us with the pros and cons of the various features of plumbing practice and with certain recommendations.

The first point I want to raise is in connection with his first subject—internal soil and waste stacks. Complete internal plumbing is a general rule in some other countries, and in this country we often do bring waste stacks inside. Until 1934 the bye-laws of the L.C.C. required soil stacks to be situated wherever possible outside the building. It has taken a long time for us to appreciate that it is really possible to put them inside. Not only the bye-laws of the L.C.C., but the Model Bye-laws issued from the Ministry of Health in 1936 contained the following: No such ventilating pipe, soil pipe, or waste pipe shall be enclosed by any part of the building except (i) where it forms a branch communication with a water-closet or other internal fitting and (ii) where it passes through any cornice or similar architectural feature.

Most local bye-laws are based on this model. The existing L.C.C. bye-laws and the Model Bye-laws contain no such prohibitions.

Another point I want to raise is one that Mr. Barrow makes about the arrangement of stacks in buildings. He says that this is very awkward in two-storey houses; but I know of some very good arrangements of this kind.

I can not quite agree with Mr. Barrow when he says that the pipes used may have to be of higher quality than would suffice for external use. I know of no bye-laws which require better or bigger pipes if the stacks are inside. I do not think, in fact, the bye-laws lay down a different quality for a pipe inside and outside respectively.

I pass from that to the concealment of pipes within buildings. I quite agree that Mr. Barrow has some point there because I have seen cast-iron pipes in cases where the w.c. is in the bathroom, and if one gets 4 in. cast-iron with these enormous sockets it is not very elegant. But it is possible to have a pipe which is less inelegant. I have seen many good arrangements where on the first floor the stack is completely enclosed and descends to the w.c. on the ground floor, where it need not be enclosed. That arrangement provides a very good compromise in many respects. I agree with Mr. Barrow's recommendations.

With regard to one-pipe plumbing Mr. Barrow says that in all the questions of comparative cost it is necessary to take into consideration certain underground drainage. In the single stack there was an endeavour to make a contribution towards reduction of costs. As far as two-storey buildings are concerned we have got ample evidence concerning the use of the single-pipe system; only this week I heard of three-storey blocks of flats on this single-pipe system. It is, of course, early as yet to make conclusive observations as to its success.

On this single-pipe system perhaps members know that many suggestions have been made. One is that the fitments shall be within 5 ft. of the stack, and that the gradient of the branch waste shall be no more than the depth of the seal of the trap, and with that in mind it is possible to get very good results. One difficulty I see about the single-pipe system is this question of back pressure on the lower fittings. On the one-pipe system the main vent is

brought below the lowest fitting in order to dissipate the air forced down. In the absence of this main vent it would force up the seals of the lowest fitment.

On the question of underwater inlets to plumbing appliances, as a result of a good deal of the work that Mr. Barrow has put in we are becoming more and more accustomed to this use. But certain points do need to be emphasized. You may be interested in the point in connection with the bye-laws of the Metropolitan Water Board. The repealed bye-laws of the Board contained certain requirements relating to the installation of these fitments. These requirements are not to be found in the new bye-laws, but before installing such fitments regard should be paid to bye-law 5 which reads as follows:

A person shall not, for the purpose of conveying, delivering, receiving, or using water supplied by the Board (*a*) use any water fitting which is of such a nature or is so arranged or connected as to cause or permit, or be likely to cause or permit, waste, undue consumption, *mis-use or contamination* of water. I am bound to say on this subject that there is only one safe method, and that is to have a separate system for such fitments as sluices, bed-pans, and so on.

The next point is this question of ventilation of w.c. compartments and frost hazard. The model bye-law on which most authorities base their own bye-laws requires a water-closet that has an external wall for at least one of its sides to have a window of an area of not less than 2 sq. ft. exclusive of the frame, opening directly into the external air. But under the London County Council Water-closet Bye-laws (Bye-law 2 (4)) it is required that a water-closet having an external wall shall have in such external wall a suitable window of an area, exclusive of the frame, of not less than 2 sq. ft., of which window an area of at least half shall open, and there shall be an air brick, air shaft, or other adequate means of constant ventilation.

Mr. Barrow refers to long runs of underground drainage, with perhaps manholes, to get to the correct position for the sewer. I think that in America they put in an internal stack and bring it down and out to the street to the sewer; they do not send it round the building.

Mr. C. C. Handisyde [*A*]: One remembers the section on plumbing in the post-war Building Study No. 4 of 1944 and the statement of the questions which called for reform, namely, single-stack plumbing and one-pipe plumbing. It is disappointing to be told at this stage that we have still got to wait for more research. It may be, of course, that this is due to the time-lag between research having been done and its practical working out in the profession.

On the question of why architects keep rainwater pipes outside, I think there are two or three reasons which might be given, but one of the principal ones is that we have got a certain amount of control where to put them without at the same time being tied up in the plan of the building.

I should like to ask why there is not yet a really foolproof water waste preventer. I should also like to know what architects really do about getting their plumbing design. Do they go to the specialist? And if they do does it mean that they tie themselves to one commercial firm? I think that is a point that is always cropping up and I should like to know what the general practice is.

Coming to the question of the sizing of the pipes, there are a number of variables. There is, first of all, the back pressure from the main. There is the question of deciding what is the demand for particular appliances, which seems to vary by as much as 100 per cent. Finally, the factor of safety comes in in everything. Can the lecturer tell us whether, if we went to three or four different firms and got three or four answers, all different, we should do right to average them up more or less as on ordinary jobs? For example, if the difference was between 1 and 1½, would it be right to take 1¼?

The Chairman: I might add one point to what the last speaker has said. The reason I put rainwater pipes outside and my soil pipes inside is that rainwater starts outside and it seems logical therefore to keep the pipes outside.

Mr. M. Hartland Thomas [*F*]: With regard to air gratings. I think it is an impertinence to put into anybody's house a permanent open draught as if they could not open their own windows. Many years ago I looked up the bye-laws relating to bathrooms, and I found that one is not required to have an external overflow to the bath, but is only forced to have it to the storage system.

On the question of the internal pipe I was a convinced 'internal piper' until I went to Germany just after the war. Several times I lodged in houses where the soil pipe was inside, and when it leaked there was a very bad smell and mess, and I think the pipe is much better outside. But one of the reasons why we are so keen on putting it inside is this anti-siphonage nuisance. We can cope with the one-vent stack, but in London houses it is not a question of one pipe but of dozens. It is not so much a question of rigid rules; many people are treating it as a matter of practice and commonsense.

The right way to try things out is on your own house, as I have been doing. You can fix the basin and w.c. and bath all into one stack, and if it does not siphon it is from the practical point of view anti-siphon, and the local surveyor has accepted it as such.

The fundamental question in all this is whether a serious risk to health is really involved. I should like to put forward that question for an answer. I have got a feeling that most of our bye-law provisions of this kind, concerning the avoidance of nuisance from drains, date from pre-Pasteur medicine. Is it not the fact that before anybody knew what a microbe was people used to think it was the bad smell that made you ill? Is a bad smell once or twice a year a serious risk to health? If it is not but is only an offence to the æsthetic nose of ordinary sensitive persons, then surely this is all the more a subject in which we should all experiment in a quiet way and build up a practice in this one-stack system of plumbing.

Mr. A. L. Farman [*F*]: We have carried out the one-pipe system for a two-storey cottage with great success; it has been installed without any trouble whatever, and it has been passed under the bye-laws.

On the question of ventilation; instead of having it on the external wall, we simply put it in the ceiling and roof space, which seems to be a compromise. There we have external ventilation without any serious risk, and we find it quite successful.

Mr. J. A. Spon: Concerning the value of materials in plumbing appliances and of more accurate technical means of determining overall size in plumbing, if we could get some accurate information as to what appliances will pass a given number of fittings, could we not get down to the better use of appliances and of materials for them? I would suggest that there is need for some information of this kind which will give us a little more accuracy.

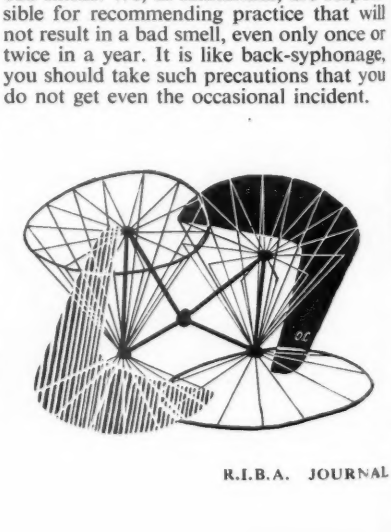
Mr. Barrow (in reply): With regard to research which has been done at the Building Research Station on the hydraulics of plumbing systems we decided to embark on this job from the fundamental point of view.

The results of our recent research tend to suggest that we should be more cautious, rather than less, in respect of trap ventilation. So far in this work we have only got results for the discharge of single fitments.

I do not think that in the research in question there will be undue delay between obtaining results and getting them into practice, because we are constantly in touch with people in practice who can come and see what is going on.

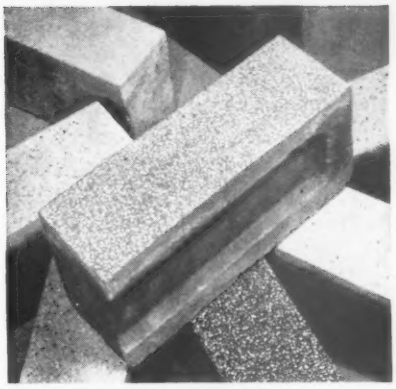
A Code of Practice is in preparation which deals with the sizes of pipes for the one-pipe system.

In the background of this is the question sometimes raised: Does it matter if you get a bad smell? I think you will have to go to the medical man for an answer, although I think we should be rather rash if we took no notice of complaints about bad smells. We, as sanitarians, are responsible for recommending practice that will not result in a bad smell, even only once or twice in a year. It is like back-syphonage, you should take such precautions that you do not get even the occasional incident.



Review of Construction and Materials

This section gives technical and general information. The following bodies deal with specialized branches of research and will willingly answer inquiries.
The Director, The Building Research Station, Garston, near Watford, Herts.
Telephone: Garston 2246.
The Officer-in-charge, The Building Research Station Scottish Laboratory, Thorntonhall, near Glasgow,
Telephone: Busby 1171
The Director, The Forest Products Research Laboratory, Princes Risborough, Bucks.
Telephone: Princes Risborough 101.
The Director, The British Standards Institution, 28 Victoria Street, Westminster, S.W.1.
Telephone: Abbey 3333.
The Director, The Building Centre, 9 Conduit Street, W.1. Telephone: Mayfair 8641-46.
The Director, The Scottish Building Centre, 425-7 Sauchiehall Street, Glasgow, C.2.
Telephone: Douglas 0372.



Messrs. Quiligotti's Quil-briks

M.O.W. Annual Report. The Ministry of Works have published their annual report for the period 1 January 1949 to 31 December 1949. It can be obtained from H.M.S.O. price 1*s.* 3*d.* net, the code reference being Cmd. 7995. During the year 192,174 individual applications for building licences were made, and licences to the value of £258,401,000 were issued; the largest item in this total being £172,488,000 for factories, works, industrial premises, shops and commercial premises.

The report introduces two new terms: in giving statistics regarding building and civil engineering work the labour force is divided into two groups, described as the '13 trades' and the '7 trades'. The '13 trades' comprise the following classes of firms: general builders, building and civil engineering contractors, civil engineering contractors, plumbing contractors, joinery and carpentry firms, painting contractors, roofing contractors, plastering contractors, glazing contractors, demolition contractors, scaffolding specialists, shopfitters, and miscellaneous.

The '7 trades' are the specialist trades: constructional engineers, reinforced concrete specialists, heating and ventilating engineers, electrical contractors, asphalt and tar sprayers, plant hiring, and flooring contractors.

Some difficulty has been experienced in meeting the crockery needs for married quarters for the Serviees and other requirements, which call for some 250,000 pieces per week. This seems to suggest that in the married portion of the Services the tide of connubial bliss is at a low ebb.

Lurifuge Paints. A fire-resisting paint that has been used in several important buildings in France is Lurifuge, and a British company has now been formed to supply it in Britain. The materials are available here and are made up in twelve tints, of which the aluminium and the gold are rust as well as fire-resisting. There are two varieties, the plain and the metallic, but the plain is considered to be somewhat more fire-resistant than the metallic. Two coats are required, but an undercoat is not strictly necessary. The paint is suitable for exterior use.

Another preparation is Luroplac, which can be applied to any wood, to which it will give fire-resisting properties, making it a very useful application for plywood doors, as an example.

Inquiries should be addressed to Lurie Laboratories, Ltd., 95 Frampton Street, London, N.W.8.

Unanswered Questions. The D.S.I.R. have started an interesting experiment in an attempt to discover the answers to specific scientific and technical questions when normal sources of information have apparently failed. The intention is to publish bulletins containing lists of questions to which there may be answers but which are not answered by the normal process of searching for information. Readers of the bulletins are invited to forward any information which helps in answering a question, and to state the source.

Bulletin No. 1 notes that 'the volume of the world's scientific and technical information is increasing at an ever-increasing rate and doubts have arisen whether adequate tools are available to guide the enquirer to the particular information he is seeking. This section of D.S.I.R. in conjunction with the Royal Society Information Services Committee, is endeavouring to investigate this question.'

Most of the questions in Bulletin No. 1 are of a highly technical non-architectural nature, but one asks 'What is the best method of protecting a structure from subsidence, following the cutting of a tree endangering it and the eventual death and decay of its root system?'

As these unanswered questions are an experiment the D.S.I.R. are not anxious to receive many questions at present, but anyone able to supply information should communicate with D.S.I.R. Intelligence I, Charles House, 5-11 Regent Street, London, W.1.

Quil-briks. There are so many varieties of bricks to be had that it does not seem likely a new one could be made. We can pick and choose from many different types of engineering bricks, facers, and common or garden bricks, of different colours and appearances. Perhaps the only class that does not lend itself to variety is the glazed brick, so often relegated to the humbler walks of building life, such as light wells and public conveniences. It may be merely association of ideas, but there is something vaguely depressing about a glazed brick; it seems to lack self-respect, as if it knew it was not likely to be placed in any position where it could add to the general sum of beauty in the world; that this need not be so was splendidly proved by Dudok at Hilversum town hall, but his example has not been much followed.

We do not know whether such thoughts have occurred to Messrs. A. Quiligotti and Co. Ltd., making them feel that they must raise the general tone of glazery, but at any rate they have produced what they call a Quil-brik, being a concrete brick with a dull-glaze terrazzo finish on one face. A wide variety of colours and finishes are available, as well as bull-nose and corner bricks. The average compression strength is given as 2,805 lb. per sq. in., which at least compares well with the British Standard 2,500 lb. for special purpose concrete bricks, and 1,750 lb. for building class A bricks.

Inquiries should be addressed to the company at Milton Street, Manchester, 13.

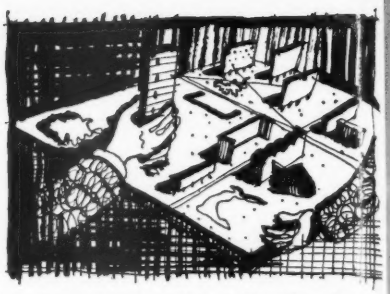
Pliex. Messrs. Expandite Ltd., of Cunard Road, London, N.W.10, market a non-drying plastic compound for bedding, glazing and stopping. The disadvantage of linseed putty is that it dries out in the course of time and is then unable to give with the expansion and contraction of the glass, and thus a crack may form between the glass and the glazing bar or frame, and rain may work its way in. Another disadvantage is that when re-glazing is required the hardened putty has to be chipped out. It is claimed that Pliex remains plastic and so can easily be stripped without risk of damage to glass or frame.

British Standards Recently Published.

B.S. 1677:1950. *Draughtsmen's drawing pins.* This Standard covers only drawing pins made especially for use in the drawing office. It does not refer to the mass-produced articles of the light type manufactured for ordinary commercial purposes. The two types dealt with are that in which the pin is screwed into the head, and that in which the pin is not screwed but is gripped firmly in the head. Price 1*s.* net, post free.

Qualifications of Planners

Memorandum of Evidence prepared by the R.I.B.A. for submission to the Committee, under the Chairmanship of Sir George Schuster, K.C.S.I., K.C.M.G., C.B.E., M.C., appointed by the Minister of Town and Country Planning and the Secretary of State for Scotland to consider and report on the qualifications of the Planner.



INTRODUCTION

There is a close historical association between architecture and town planning. Notable examples in Great Britain are the 18th century developments in London, Bath, Edinburgh and Dublin and, more recently, Hampstead Garden Suburb and Welwyn Garden City. The quickening influence of architecture is seen again today in the designs for our new towns and in the redevelopment schemes for our bombed cities. It can be justly claimed that the character and quality of town planning from the 18th century to the present day has resulted from the imaginative interpretation of human needs by architects.

The social importance of town planning was recognized in this country early in the century. The Royal Institute of British Architects played a leading part in the movement which led to the introduction and passing of the first Town Planning Act of 1909.

The International Conference on Town Planning held in 1910 following upon the passing of the Act, was convened and organized by the Royal Institute. This Conference not only reviewed town planning through classical and mediæval times but also made searching and extensive enquiries into existing conditions, thus laying the foundations for future development. The formation of the Town Planning Institute some four years later, with the wholehearted support and goodwill of the Royal Institute, was the direct result of these activities. Of the professions represented in the membership of the Town Planning Institute the Royal Institute has by far the largest proportion.

The Royal Institute has been represented on the Town Planning Joint Examination Board since the Board was established in 1930 and has taken an active part in the work.

Town and Country planning has been, so far, largely negative in character, consisting of a series of controls operated on the basis of 'statutory planning schemes'. Once a scheme had been prepared by a local authority and approved by the Minister it could be implemented largely by administrative means. The powers over land were inadequate and the necessity for compensation acted as a check on positive planning. The general dissatisfaction with this form of planning led to a demand for a more realistic, positive and flexible system. In response, the Government passed the Town and Country Planning Act, 1947, which provides the means for effective planning. For the first time, with the passing of this Act, the powers over land and for positive planning are adequate.

FUNCTIONS OF THE ARCHITECT

It is worth recalling the functions of the architect in the more restricted field of the design and erection of individual buildings. These functions will vary according to the extent of the commission. The architect must make an appreciation of the problem, survey the site, consider the effect of surrounding conditions and then prepare a design which will be the most efficient and beautiful of which he is capable; taking in the process the advice of the appropriate specialist technicians and controlling their co-operative efforts. Finally, he must coordinate the work of the specialists, builders and other bodies needed to achieve the successful completion of the building project. These functions will be similar in degree in the wider field of planning and will vary similarly with the extent of the planning problem. The architect is thus by his training and everyday practice a person especially qualified to translate public need into terms of building and, by relating those needs one to another, into terms of town planning. The contribution he makes is threefold: the design of the building, the relationship of buildings to each other and their efficient distribution within an overall plan.

The nearer the planning activity is to architecture the greater the contribution the architect can make. As the problem leaves the building group on the individual site for the wider field of detailed urban planning the work of the surveyor, the engineer, the sociologist and other specialists becomes increasingly necessary but, since an essential part of the problem is the spatial relationship of buildings, the architect is still a key person.

FUNCTIONS OF THE PLANNER

The term 'Town and Country Planning' must now be held to include all the activities covered by the Town and Country Planning Act, 1947, and it becomes important to recognize the parts to be played under it by a variety of persons, some creative, some technical, some legal and some administrative. If all those engaged in the work were to be known as Town Planners, confusion would arise and the activity might be in danger of losing its direction and, from this, its capacity to serve the community.

With the intention, therefore, of providing a guide and indicating a limit to his proper function in town planning the Royal Institute has set out what is believed to be the architect-planner's contribution and responsibilities at the various levels at which town planning takes place. The Royal Institute recognizes, however, that in the future the architect will need to hold town planning qualifications to enable him to lead a planning group in the field of detailed three-dimensional planning: but attention is drawn to the fact that there are, at the present time, a number of architects who, although without official qualifications, are fully able to do this work by virtue of experience and capacity.

LOCAL PLANNING LEVEL

CITIES, TOWNS, VILLAGES, CENTRAL AREAS, HOUSING COMMUNITIES

The architect-planner, as providing the detailed general and unifying creative impulse, should be the principal executant.

Explanation

Local planning is three-dimensional; i.e., it concerns not only two-dimensional planning on paper, but a third dimension in which the buildings and the spaces between them are completely realized, both as to functions and form. The success of three-dimensional planning from the point of view of those for whom it is done rests, as in architecture, upon the fusion of the useful with the beautiful.

Many other factors are also present at this level: land use, involving surveyors: drainage, road-work, traffic engineering, water supply, etc., involving engineers: gardening, tree planting and tree grouping, involving horticultural advisers: and in the preparatory stages, sociologists, economists, etc., are consulted. All these must be considered as subsidiary to the main planning aim and controlled by it.

COUNTY PLANNING LEVEL

The responsibility of the County Planning Authority is to hold a balance between town and country and to adapt its development plans to fit into the regional pattern. The detailed planning of smaller towns and villages is also a county responsibility: but this may be carried out by the smaller local authority units.

Explanation

The call for the architect-planner will vary with the character of the county and its degree of urbanization.

Where the planner at this level is not an architect it is essential that the planning staff should include an architect of real ability to advise on all questions of three-dimensional design.

REGIONAL PLANNING LEVEL

This is the sphere of government departments, groups of local authorities and other advisory bodies, official and non-official. The problems are similar to national ones (see below) but on a more restricted geographic basis, and more detailed in scale. The planning team is smaller and more easily defined. The problems may vary widely according to the nature of the region. (Compare for instance, the regional problems of the Scottish Highlands with those of the industrial West Midlands.) Regional planning involves major policy decisions (i.e., on decentralization of industry and population in the case of a region with a large concentration of urban areas; or on the development of new industries, forests, national parks, etc.) but it will also be concerned with more precise physical surveys and development proposals.

Explanation

The architect should here be considered as a member of the planning team or as a consultant to advise on the three-dimensional aspects of planning which is otherwise two-dimensional, a point not always apparent in a factual appraisal or on a map.

NATIONAL PLANNING LEVEL

This is mainly the sphere of government departments and covers such primary problems as the economic use of national resources, the use of land, the distribution of population and industry, and large-scale problems of community development. Work on this level includes national survey and mapping; the collaboration of government departments and other interests on the economic, social and physical aspects of planning; research into the technique of survey and development planning; the evolution of planning standards (open space, residential lay-out, siting, etc.)

Explanation

The architect's main contribution in this sphere is small as touching the primary problems of the use of national resources, but important in the evolution of planning standards. These standards can be seen as a return to the local planning level, because as they affect the smallest groupings of buildings they are by the same token, drawn from the same source. It is to be noticed, for instance, that the densities, spacing and lighting of buildings which have official recognition today are drawn from researches, with practical examples, carried out by architects during the inter-war period.

SUMMARY OF PLANNING LEVELS

From the foregoing it will be seen that the architect-planner has a role of diminishing importance in the ascending levels of planning.

It is generally understood that some 80 per cent of the population dwell in urban conditions and it is a fact that the preponderance of planning needs lies in the towns and industrial areas. The call for architect-planners will be heaviest at local planning level and progressively lighter in the ascending levels. Only a small personnel of mixed experts will be required at the national level. As urban planning is closely linked with the problems of three-dimensional design it is certain that the greatest demand will always be for the architect-planner as specialist in the planning problems of cities, towns and villages.

TRAINING

From even so general an assessment of the varying functions of persons engaged in town planning as is set out above the Royal Institute finds no justification for the conception of a new profession of persons completely equipped to deal with town planning; since it is obvious that no one person is competent to deal with all aspects of, or at all levels of planning. The Royal Institute sees, rather, the need for more accurate differentiation and recognition of functions.

To a large extent the training required for urban planning is an extension of the training for architecture, where planning, construction and design are inseparable elements, not only in the three-dimensional grouping of buildings but also in the relation between buildings, road systems, parks and natural features. The visual element of design is also important in such detail planning problems as architectural control and preservation; control of advertisements; choice of appropriate building and surfacing materials; use of colour; design of street furnishing, etc. Indeed, most of the everyday problems which confront a local planning authority are concerned with building. Urban planning, like architecture, is the integration of practical, social and æsthetic needs; and in this particular field the architect, given post-graduate training in the technique of survey and of development planning, will generally be in the best position to lead the technical team concerned in the development of cities, towns and villages.

Architects, engineers and surveyors form the bulk of the planning profession today. The Royal Institute recommends that a prerequisite of planning qualifications must be full qualification within the principal field of each contributory profession.

It may be that sociologists, geographers, etc., who have been collaborators at the survey stage, will equip themselves as qualified members of a planning team in order to contribute in their own sphere, at national, regional and county planning levels. It would be an advantage to make an estimate of the numbers and various types of planners likely to be required over the whole country, as a guide to the development of training courses.

Whatever forms the training of planners may take in the future, it will always be necessary to guard against the mortification of town and country planning by scientific technique and legal device. Architecture, and its extension in the wider field of urban planning will remain the visual expression of our civilization. The Royal Institute believes that architecture will only flourish as an inspiring force if it is founded on social and technical progress. It is important, therefore, that the value and significance of architecture should be understood as a vital element in the process of re-shaping our towns and countryside.

Summary of the Report of the Committee

On October 13 1950 the Minister of Town and Country Planning, and the Secretary of State for Scotland, presented to Parliament the report of the Committee on the Qualifications of Planners, set up in May 1948 with these terms of reference:

'To take account of the present and prospective scope of Town and Country Planning and to consider and report what qualifications are necessary or desirable for persons engaged in it and to make any recommendations affecting those persons which appear to the Committee to be relevant.'

There are six chapters and two appendices. The report is summarized as follows:

Chapter 1. A history of planning. This chapter gives an account of the various reports and enactments that have been made, from Edwin Chadwick's report of 1842 on the sanitary condition of the labouring population of Great Britain to the Town and Country Planning Acts of 1947.

The report points out that the early enactments were negative, in that they restrained what was undesirable, but in the later stages it was realized that this negative attitude was not enough; it must be accompanied by a positive conception of what is desirable, and that there must be power not only to restrict but also to promote. It was only with the legislation of 1944 onwards that adequate powers were created to make the positive conception effective.

Chapter 2. The scope of Town and Country Planning. The idea of planning is meaningless without objectives. This raises two questions: (1) What is the range of objectives which have to be taken into account in planning the use and development of land? (2) What is the function of the town and country planning authorities as such in relation to these objectives?

Many important issues of national policy are involved in the regulation of the use of land. There are a number of conditions affecting the character of an area as an environment for living which can and should be the concern of the planning authorities, and which, although the scope for their attainment may be affected by national policies, are not determined by them. In regulating the utilization of land in its area a local authority has to consider the effect on the lives of the people who will live in that area. The Board of Trade has to deal with the location of industry, with consideration of national economic results; the Defence Ministers have to consider strategic matters, and the Ministry of Transport is concerned with communications, but the local authorities have to consider how the measures necessary for these purposes can be fitted in their area in such a way as to make it as good an environment for living as possible. This is the distinctive essence of their function.

Thus there is a two-fold planning function to be performed: (1) the determination of policies—social, economic and strategic; and (2) the preparation and carrying through of a plan for the use and development of land in conformity with these policies. While (2) is the direct function of town and country planning authorities, they have also a wide responsibility in connection with (1), the significance of which has been increased by the new powers for carrying policy into effect. It is this which, in the view of the Committee, has more than anything else raised the question of the qualifications required by those engaged in town and country planning.

The report then turns to the question whether planning is to be regarded *primarily* as a 'social activity', or as a matter of 'design'. And should planning be regarded as team work, or as a task for one directing mind? In this connection the report uses the term 'design' in the sense of setting out on a drawing board a pattern of physical features, and not in the sense of arranging a social and economic pattern for communities.

The report gives to outward beauty a high place in the scale of values, and therefore the 'designer' should be brought into consultation even in the prior process of planning. If a plan is functionally right it should be capable of being designed in such a way that it is æsthetically satisfying. Skill in design must be regarded as one of the most important of the special skills that have to be utilized in the planning process, but not as dominant.

Many specialist skills must be brought together in planning; an adequately staffed planning office with a large planning responsibility will have available the advice of an architect, engineer, surveyor, geographer, economist, and a lawyer. Planning must therefore be team work, but, to be effective, the composition of the plan and its implementation when approved needs to be directed by one man.

Chapter 3. The facts of the situation. This chapter deals with the facts in the existing situation which must be taken into account, such as the different types of employers of persons engaged in planning, the differences in their tasks and therefore in the kind of staff they require; the existing staff employed and the methods of their recruitment and training. There are four main types of employment: (*a*) local planning authorities, (*b*) new town corporations, (*c*) central Government Departments, and (*d*) private practice.

Chapter 4. Pointers from the evidence. This chapter gives extracts from the evidence of some 70 individuals and bodies who were invited to state their views. The consensus of opinion appeared to be that it is a mistake to regard planning as the function of some new and special profession.

Chapter 5. Conclusions and Recommendations. After some preliminary observations the chapter deals with the form of organization; the posts to be filled, and the qualifications required.

Chapter 6 contains the Summary of Conclusions and Recommendations from which the following are extracted:

Planning is now primarily a social and economic activity limited but not determined by the technical possibilities of design.

The adoption of a positive planning policy has put upon both central and local government authorities a new and vitally significant responsibility, the proper fulfilment of which requires not merely technical skill but the wisdom of good minds. More than ever before planning authorities need to recruit people with first-class intellectual qualities and educational attainments. Consultant planners and specialists still have a useful contribution to make to the work of local planning authorities.

The organization of a local planning authority should be such as to vest in one officer the responsibility for handling the whole planning function. He must be able to organize the use of specialists and to see all the stages of planning as one whole and continuous process with far-reaching social and economic aims to achieve.

These abilities demand a creative and imaginative faculty of mind, a power of synthesis and a broad human understanding; in developing such abilities a university education is of value, and the chief planning officer should normally have received such an education. He need not possess technical skill in design, but he must be able to appreciate good design, and also to understand and co-ordinate the work of technically qualified staff.

The chief planning officer need not possess a technical qualification in architecture, engineering, or surveying, though a technical training in one of these subjects should be capable of giving the sound basic educational discipline which is required, provided that it is handled in an educative way, preferably at a university.

Specialist education in planning should normally be provided by a post-graduate course. The five-year degree courses recently inaugurated in Durham and Manchester universities may be regarded as valuable experiments whose results should be kept under careful observation.

A planning staff college might be valuable as another way to intersperse periods of education with practical experience. Failing this, an annual summer course should be held and organized by a university.

Opportunities should be provided for persons engaged on junior tasks to acquire appropriate qualifications and to rise from the ranks.

There is a need for a national institution to watch the whole field of planning studies, and to promote liaison between workers in this field. The Town Planning Institute provides an obvious foundation on which to build, but the basis of membership must be substantially widened. The letters A.M.T.P.I. should eventually come to be relied on as indicating the standard of a university graduate with a two-year post-graduate training.

Practice Notes

Edited by Charles Woodward [*A*]

IN PARLIAMENT. Statute (Financial Provisions). Asked whether, in view of the concern about the working of Parts V, VI and VII of the 1947 Town and Country Planning Act, he would consider the appointment of an expert committee to reconsider the financial provisions of the Act in the light of the experience gained, the Parliamentary Secretary to the Ministry of Town and Country Planning replied: No, Sir. We were very grateful to such bodies as the Royal Institution of Chartered Surveyors and the Chartered Auctioneers and Estate Agents Institute who, after having seen the Act in operation, have given their considered opinion. Their opinion is examined in the light of circumstances, and changes are made as and when necessary. As far as small matters are concerned, evidence has been given by my right hon. friend in the Regulations he has introduced. As to radical alterations, the present Parliamentary situation does not allow them to be made. (November 21, 1950.)

Compulsory Purchase (Compensation). Asked whether he was aware that cases are arising where people of extremely small means are having small plots of land compulsorily purchased under the Town and Country Planning Act, 1947, for sums which are only a fraction of what they originally paid for them; and if he will introduce legislation to ensure immediate compensation for these people instead of the eventual and uncertain compensation provided for under the Act, the Chancellor of the Exchequer replied: I am aware that compensation under a compulsory purchase may fall short of the price originally paid, because development value was, on 1 July 1948, removed from the hands of private owners. Owners had the right to claim against the £300 million for this loss of development value, and owners of single housing plots which have been compulsorily acquired have been promised, if they have claimed, a payment out of that sum equal to development value. The answer to the second part of the question is 'No'. In answer to a further question the Chancellor said: As I have already explained, in the case of owners of small plots of land, they will be paid 100 per cent when the £300 million comes to be distributed. The Act provides that the distribution must begin in 1953. (21 November,1950.)

Construction Costs. Asked why the provisions of Form H.B.C.22 issued under Section 76 (2) of the Local Government Act, 1948, allow two modern houses of identical size to be given 1938 construction costs of £606 and £1,213 respectively, the Minister of Health replied: The figures relate to houses of widely differing standards of construction, finish and equipment. Details of the two specifications are given in the statement referred to. (23 November 1950.)

Land Valuation (Claims). Asked whether the Central Land Board will pay professional charges incurred in connection with the completion of Form C.V.121 (Part II), if the claim is substantial, the Chancellor of the Exchequer replied: No. The Central Land Board is already authorized to make a contribution to the fees incurred by claimants in the employment of a person professionally experienced in the valuation of land for the purpose of making their claims. Where a claimant provides a valuation on Part II of the Form C.V.121, this is part of the procedure for dealing with disputed claims, and there is no ground for a special payment towards these charges. If a claim is referred to the Lands Tribunal, the Tribunal will determine costs. (27 November 1950.)

MINISTRY OF TOWN AND COUNTRY PLANNING. Building of historic interest in Ely. The Cathedral of the Holy Trinity, the parish church of St. Mary, the church of St. Michael, Chettisham, and the church of St. Mary, Stuntney, have been listed by the Ministry as buildings of special architectural and historic interest.

College buildings listed include Ely Ports, the Barn and Stables to the south, and Guest Quarters of the Monastery and subsidiary buildings, the Guest Hall and subsidiary buildings including the Headmaster's House, Bishop's House (Prior's House) and residences incorporating the remains of the Infirmary and including the Chapel. The Bishop's Palace, Palace Green, is also included.

Under the provisions of the 1947 Planning Act, no person may demolish a building which has been listed, nor may any alteration or extension to the building be carried out unless at least two months' notice has been given to the local planning authority. (17 November 1950, No. 2.)

Safeguarding of Agricultural Land. *Circular No.* 99, dated 24 November 1950, addressed to local authorities in England and Wales, suggests how agricultural land can be protected through the development to be submitted by Planning Authorities, and by ensuring that the agricultural interest is properly considered on individual proposals for development. The Ministry of Agriculture and Fisheries are preparing maps showing the areas over which they do not wish to exercise any protective interest, and the areas in which it is considered that future development could take place with the least harm to agriculture. *Circular No.* 28 is cancelled by this *Circular No.* 99 and the reference in paragraph 5 (1) of *Circular No.* 65 to the arrangements laid down in *Circular No.* 28 should be read as a reference to the arrangements laid down in this Circular. *Circular No.* 99 can be obtained at H.M. Stationery Office, price 2d.

Speech by the Parliamentary Secretary to the Ministry of Town and Country Planning. In concluding his speech to the Town and Country Planning Association's Conference on 16 November 1950, the Parliamentary Secretary to the Ministry of Town and Country Planning, Mr. Geo. S. Lindgren, J.P., M.P., said:

'In planning we have a most difficult task. We must always remember that we have to live tomorrow and at the same time think of the things that will matter in 50 years' time. We must think big, though realistically, and always in terms of what is practicable. We must think new, think positive. We must be ready to change our ideas, to anticipate the future.

'Above all, we must remember we are dealing with human beings and how they live, and we must carry public opinion along with us. That does not mean every private opinion; it means broad public opinion.

'It is my view, Mr. Chairman, that the real testing time of planning is coming next year when the Development Plans of the Local Planning Authorities are due to be submitted to my Ministry. But submission to and approval by my Ministry is not enough. Nor is it enough for the Local Planning Authority to have consulted and reached agreement with the Boroughs and Urban and Rural Districts within its area. The ordinary citizen must be helped to understand the plans, to comment on them and to criticize them. It sometimes disturbs me, Mr. Chairman, that whilst we are moving more and more towards "joint consultation in industry", with the worker understanding his niche in the industrial machine and making his contribution to policy and day-to-day management, in local and national government we somehow fight shy of "joint consultation" with those whom we serve. Nothing will so vitally affect the lives of men and women throughout the country over the next 20 years as the Development Plans to be submitted next year. If those plans are to become a reality, if they are to succeed, they must be understood by those whom they affect. There must, therefore, be full and sympathetic consultation with them.

'I opened this talk by paying a well-deserved tribute to the Town and Country Planning Association. May I now make a request to this Association, speaking for the Ministry of Town and Country Planning and, I am certain, too, for most Local Authorities? We should welcome with open arms your help in getting the plans thoroughly understood in every district up and down the country.'

MINISTRY OF HEALTH.
Circular L.R.L. 4/50, 30 November 1950, addressed to Housing Authorities and County Councils in the London Region, stresses the importance of economy in the use of softwood and calls attention to the 'Economy Memorandum' in the use of timber issued by the Ministry of Works in September 1949.

The Circular also states that if softwood is applied for on a Building Licence application form, it must be established that no alternative is possible. Authorities are asked to co-operate in this matter, and, where the essential *minimum* quantity of softwood is known, to state the amount on the Building Licence.

R.I.B.A. STANDARD FORM OF BUILDING CONTRACT. The following Practice Notes are issued by the Joint Contracts Tribunal :

Practice Note 23. The opinion of the Tribunal was asked as to whether in contracts current on 1 June 1950, in which no rates for day work were mentioned or inserted in the Bills of Quantities, day works carried out after that date should be charged in accordance with the National Schedule of Day Work Charges authorized by agreement between the Royal Institution of Chartered Surveyors and the National Federation of Building Trades Employers in 1933 or with the similarly authorized revised National Schedules which came into operation from 1 June 1950.

It was generally accepted by the Tribunal as the intention that day works carried out after 1 June 1950 in connection with a current contract under R.I.B.A. Conditions should be chargeable in accordance with the revised National Schedule of Daywork Charges, Part I. While this was the intention and perhaps the proper interpretation of the contract, it was recognized that in law the point might not be free from doubt.

The question was, therefore, one upon which the Tribunal were not prepared to express an opinion, in the nature of a ruling, but it was felt that this statement by the Tribunal of what was accepted to be the intention when the revised National Schedules of Daywork Charges were stated 'to operate from 1 June 1950' would be of assistance to all sections of the industry.

Practice Note 24. The Tribunal have considered it desirable to supplement the opinion expressed in Practice Note 19 regarding the cash discount reserved to the Contractor upon goods supplied by a Nominated Supplier under Clause 22 of the R.I.B.A. Standard Form of Contract by this note upon the cash discount reserved to the Contractor upon materials supplied and fixed or work executed on the site by Nominated Sub-Contractors under Clause 21. While the certificate of the architect is not a condition precedent to the right of a Nominated Supplier to receive payment for goods supplied, it is agreed between the Employer and the Contractor in Clause 21 (*b*) that payment of a nominated Sub-Contractor is to be made by the Contractor within 14 days of receiving from the Architect a certificate including the value of such Nominated Sub-Contractor's work, materials or goods less only (i) any retention money which the Contractor may be entitled to deduct, and (ii) a cash discount of 2½ per cent. Unless, therefore, there were any special arrangement between the Contractor and a Nominated Sub-Contractor whereby it was agreed that payment for the sub-contract works should be made in a manner different from that provided in Clause 21 (*b*), it would be the view of the Tribunal that the certificate of the Architect is a condition precedent to the payment of a Nominated Sub-Contractor and from any amounts so

certified the Contractor is entitled to make the deductions provided for in that clause. If, therefore, a Sub-Contractor, who had accepted nomination under Clause 21, failed to provide in the Sub-Contract Sum for the discount reserved to the Contractor under his contract with the Employer, the Contractor would not thereby be precluded from making the authorized deductions from any amounts certified as due in respect of the sub-contract works.

It was the opinion of the Tribunal that the Architect as a matter of regular practice in all invitations to proposed Nominated Sub-Contractors should call attention to the provisions of Clause 21 (*b*) which sets out the agreement between the Employer and Contractor as to the manner in which payments to Nominated Sub-Contractors shall be made.

ROYAL INSTITUTION OF CHARTERED SURVEYORS. The Royal Institution has published a 'popular version' of its detailed Memorandum on the 1947 Planning Act. The Minister of Town and Country Planning described the Memorandum as a 'valuable document, written with ability and knowledge'.

The Royal Institution found three main defects in the Act, i.e., an owner's incentive to sell his land for approved development is destroyed by the reduction of the value of the land to that of its 'existing use'; there is widespread uncertainty as to the amount of compensation an owner may expect for the loss of his freedom to develop his land; and the charges levelled on owners who do develop their land are excessive.

But the subject of Town and Country Planning, and of the effect of the Act upon every owner, or potential owner, of land is an extremely complicated one, bristling with technicalities which it is very difficult for the layman to understand. Yet it is to his vital interest to understand it. For those reasons the Royal Institution has published this 'popular version' which is obtainable at its offices at 12 Great George Street, London, S.W.1, price 1*s.* post free.

PROVISION OF ADEQUATE TIME FOR THE PREPARATION OF TENDERS. The London Master Builders' Association have instanced cases of contracts in which too short a time has been allotted for the preparation of the respective tenders. It has been pointed out that the necessity of obtaining quotations from firms of sub-contractors before sending in tenders had rendered it impossible for builders to tender in the specified time. Delays were unavoidable owing to shortage of staff in the offices of both builders and sub-contractors. In view of these conditions the Practice Committee once again recommend that adequate time should be allowed for the preparation of tenders, according to the size of the contract.

LAW CASE. Alperton Builders Ltd. v. Miss E. M. Donald was tried by Sir Lionel Leach, K.C., Official Referee, on 7 November 1950.

The plaintiffs sued the defendant for £643 15*s.* 7*d.* balance of an account for reconstruction, repair and decoration in the conversion of a house into four flats. The work was to cost £875, and the plaintiffs said that in consequence of extra work being ordered, the total account came to £1,707 18*s.* 3*d.*

A building licence was issued in February 1946 for £950, and the conversion was completed by the following November, when a further building licence was applied for in order to cover the additional cost of completion. The further licence was issued on 30 December 1946 for £700.

His Honour said that work in excess of £950 was done in 1946 without a licence. This brought the case within Jackson, Stansfield and Sons *v.* Butterfield (1948, 2 A.E.R. 558) and the defendant's plea of illegality prevailed, unless the plea of estoppel could be maintained, and his Honour saw no ground for saying that it could. On authority, binding upon the Court, the builders carried out work in contravention of a Defence Regulation which had the same force as an Act of Parliament. The builders were asking for payment of a debt incurred illegally (Bostel Bros. Ltd. *v.* Hurlock, 1948, 2 A.E.R. 312) and his Honour held that it could not be made the subject-matter of an action, and if it could not, how could the plaintiffs plead estoppel? They were active parties to the illegality; they did the work without a licence which brought them within the penalty clause of the Defence Regulation. The defendant could not be excluded from bringing the facts to the notice of the Court. Even if the illegality had not been pleaded, the Court would have been bound to refuse relief. Illegality was not condoned by the grant of a supplementary licence. The plaintiffs claim was unenforceable and the action must be dismissed, with costs. His Honour said the costs would be taxed, and there would be a stay of execution, provided an appeal was set down in 21 days. (THE ESTATES GAZETTE, 18 November 1950.)

Review of Films—20

The country of origin and date of release are given first. The film is in monochrome unless otherwise stated. The sizes (35 *mm. and* 16 *mm.*) *are given. Sound films are marked 'sd', and silent 'st'. The running time is given in minutes.*

(*F*) *indicates free distribution.*
(*H*) *indicates that a hiring fee is payable.*

Planned Town
Britain 1950 (*H*) Teaching notes available.
Summary. The planning of a Garden City: the need for healthy and pleasant surroundings to take the place of slums and overcrowded areas; Welwyn as an example; a town in which growth is controlled and where amenity and proper siting of housing and industry are planned from the outset; there are plenty of open spaces among the buildings and farming land and open country exists on the perimeter.
Appraisal. A carefully thought out and well presented film, limited in its approach to Ebenezer Howard's philosophy at the time of Welwyn's conception in the early part of this century. No reference is made to more recent planning developments. The photographic quality is somewhat variable, but effective use has been made of simple animated diagrams. Within the scope of the film, the material is well chosen and arranged, and the commentary clear and interesting.

The film is designed to supplement the teaching of modern geography in secondary schools. Provided adequate preparatory work were done, the film could certainly be used as a background film to show the possibilities and opportunities which planning provides. Adult lay audiences unacquainted with the subject should also find the film of interest.
16 sd. 13 minutes. G.B. Film Library, Aintree Road, Perivale, Greenford, Middx.

The Wimpey No-Fines Concrete Permanent House
Britain 1945 (*F*)
Summary. Method of construction of the Wimpey No-Fines Concrete permanent house. Shots of completed houses and details of construction from foundation to roof and rendering of outside walls.
Appraisal. A good record film and within its limited field competently made. The photography is satisfactory, the unsophisticated approach being effective in a film of this kind. Rather more sub-titling would have been useful.
16 st. 18 minutes. Sub-titles in English and French. Film Library, Ministry of Works, Lambeth Bridge House, Albert Embankment, London, S.E.1.

Seco Unit System of Construction
Britain 1950 (*F*)
Summary. A description of the Seco Unit System of Construction. Development during the war of a speedy method of constructing temporary buildings; post-war use and advantages of this system, the great variety in types of building for which it can be used; the method of construction; use of steel members; different forms of cladding; location of manufacturing and distributing centres; a school for training in methods of erection.

Appraisal. An efficient film, interesting as an example of the modular system applied to prefabricated construction. The principles and their application are well explained, although perhaps more information might have been given about the basic materials employed. The commentary is clear and interesting, but the background of classical music is not only out of place but distracting in a film of this kind. The technical value of the film is somewhat offset by the rather too obvious sales talk and the film could, with advantage, be shortened by cutting some of the introductory scenes which have no direct bearing on the rest of the film.
16 sd. 27 minutes. Uni-Seco Ltd., 25 Upper Brook Street, Park Lane, London, W.1.

Correspondence

THE ROME PRIZE

Sir,—Mr. Maxwell Fry's unfortunate word 'impotent' applied to traditional architecture suggests the thought that one had perhaps better be impotent than produce abortions.

Certainly Mr. Edward Carter, aged 25, pursuing, like his forefathers, the ideal of perfect balance, does not deserve Mr. Fry's epithet.—Yours truly,

T. L. DALE [*F*]

Sir,—Mr. Maxwell Fry writes, 'Cambridge may be architecturally impotent, but need we give it such official and academic (*sic*) encouragement.'

It would seem that the only way a university can exhibit such impotence is by its choice of architects. If so, it follows that these also must be of irreproachable sterility.

Perhaps the word 'may' can be construed as an escape clause, but those of us who are implicated would, I am sure, like Mr. Maxwell Fry to clarify his diagnosis. The verdict may shatter our illusions, but it is better to know the worst.—Yours faithfully, JOHN MURRAY EASTON [*F*]

COLOUR THERAPY IN HOSPITALS

Sir,—I have read the article in the October JOURNAL with some surprise, as it gives the impression that architects are the 'experts' on the question of colour, whereas, in fact, they are not. Almost the whole field of colour knowledge, as at present known, has been covered by chemists, physicists, neurologists, psychologists and painters, and I can assure Mr. Anthony Clark that the medical profession in hospital practice has far more knowledge of colour psychology than is evident in his article, which states nothing not already known to any intelligent nurse.

I and my colleagues at this college were working on colour therapy for hospitals three years ago. We produced some schemes for a local hospital which were very successful, and the Medical Superintendent, Dr. L. Cosin, was a most knowledgeable instigator of the scheme.

There is developing in this country a recognition of the U.S.A. standard hues for a Safety Colour Code, and I suggest that architects, engineers and contractors should find out more about this and use it in all hospitals, industrial buildings and public thoroughfares.—Yours truly,

F. A. TAYLOR

(Head of Arts Department, South East Essex Technical College and School of Art.)

Mr. Taylor's letter was sent to Mr. Clark, who replied:

Sir,—Mr. F. A. Taylor apparently resents any suggestion that architects might be 'experts' on the question of colour. But why? As Head of a Department of Arts does he not consider colour to be an integral part of design? Would he have the creative efforts of architects confined to monochromatic form?

Does Mr. Taylor wish to infer by the rest of his letter that colour therapy is so well understood and widely practised that my article is superfluous? If so, I leave the truth, or otherwise, of such an assertion to the judgment of those with knowledge of the evidence to be found in the great majority of hospitals in this country.—Yours faithfully, H. ANTHONY CLARK [*F*]

MURAL PAINTINGS IN A FACTORY CANTEEN

Dear Sir,—I am frequently stirred to write you thanks for good articles in the JOURNAL but cannot energize myself sufficiently for it. May I now, therefore, send thanks for a good cover and a good interior.

This last number contains two good pages of mural paintings in a factory canteen by Alan Sorrell (pp. 446, 447), and also the mosaic of Bulla Regia. In the latter, the information given suggests scale, size, position, etc. in a clearly written manner, so that I can imagine the situation very easily.

In the murals, however, there is no indication whatever of scale, position or colour. Could you kindly add some few details in the next JOURNAL on this point? The content matter is clearly defined; one assumes a painted surface and also that the paintings are in defined panels on the wall. I think they are most interesting examples of the 'panel' type of decoration, but should like to know more about them. —Yours faithfully, W. M. KEESEY [*Ret. A*]

Editor's Note. The October JOURNAL was produced mainly during the recent printing industry dispute when type had to be hand set by apprentices; hence the restriction of information on the factory mural paintings to a single headline. The type describing the Bulla Regia mosaic had been set before the dispute began.

The factory was for Messrs. John D. Francis Ltd., and is at Fazakerley, Liverpool; the architects were C. J. Epril [*F*] and Associates. Mr. Alan Sorrell, the artist, has supplied the following information on the mural paintings. The panels correspond in size, shape and position with windows in the opposite wall, measure 6 ft. by 9 ft. and are sunk flush with the wall surface. They were painted with an oil and wax medium on fibreboard panels, which had been given a special shellac surface. The painted pelmets and objects 'on the window cills' are warm and brilliant in colour, while the distant 'views' are cool in colour. The interior colour scheme of the canteen was designed as a whole, the painted panels being elements in it.

The decorative use of colour has been extended through the factory and offices, the general principle being that structural features such as steelwork should be positive and strong in colour with wall and ceiling surfaces more retiring. The machine cases are a steel grey, the service pipes are in strong selective colours, and the structural steelwork is a brilliant scarlet.

Book Reviews

Frederick Catherwood, Archt., by *Victor Wolfgang Von Hagen.* 9¼ in. xix+177 pp. + backs-of-pls. + front. + 16 pls. New York: Oxford U.P. 1950. £1 10s.

Frederick Catherwood, artist-archæologist, disciple of Piranesi, and an architect who explored both the Egyptian and Mayan civilizations, recording his discoveries with drawings that display extraordinary skill in documentary art, was one of the early members of the Institute. Mr. Victor Wolfgang von Hagen, an American explorer and writer with a deep first-hand knowledge of the countries of the Mayas, has devoted immense pains to the task of uncovering information about Catherwood and of rescuing him from the undeserved obscurity in which he has languished since his presumed death at sea nearly a century ago. No one who knows Mr. Von Hagen will doubt that he was the right person for such a task. He is a tremendous enthusiast and indefatigable, but also a man with a proper respect for accuracy and scholarship. His biography of Catherwood, in which the entire series of admirable plates "Views of Ancient Monuments in Central America, Chiapas and Yucatán" are reproduced and to which Aldous Huxley has contributed an introduction, is lively and absorbing. It deserves to be widely read. J. C. P.

Schools, by *Lawrence B. Perkins and Walter D. Cocking.* (Progressive Architecture library *series.*) 11½ in. (v) + 264 pp. text illus.

Planning Secondary School Buildings, by *N. L. Engelhardt, N. L. Engelhardt, junr.*, and *Stanton Leggett.* 11¾ in. (vii) + 252 pp. text illus.

Each New York: Reinhold; London: Chapman and Hall. 1949. £4.

The first book is written by an educator and an architect, and sets out in considerable detail the close relationship of educational thought and school design. This alone makes the book worthy of study, and emphasizes the need for such co-operation.

In the introduction the school project is shown as a social responsibility and an asset to the whole community. Subsequent chapters deal, firstly, with siting, classrooms, halls and gymnasia, workshops, laboratories and administrative rooms; secondly, with building technique, physical requirements and equipment. The educational ideas which they contain, particularly in connection with the multi-purpose use of space and the relationship between different activities within the school, appear already to be generally accepted, although in this country they have only recently been seriously and widely considered. These theories can undoubtedly lead to very different architectural solutions from those with which we are familiar—a circumstance which makes the book of real importance in Britain, both to the educator engaged in propounding the ideas, and to the architect concerned with translating the ideas into buildings.

There is a very large number of photographs, plans and diagrams, but only a few suggest that American architects have succeeded in designing the interesting and exciting buildings which these educational aims should inspire, although there are many examples where the standards of space requirements are superior to present English standards. The section on physical requirements, like so much writing on this subject, hesitates between the general interest of the layman and the specific needs of the architect. Most aspects, however, are fully and interestingly covered, showing that in America there is awareness of all those problems with which building scientists and some architects are concerned over here. But there are many photographs of interiors which show that, even in the better planned schools, the day and artificial lighting apparently falls short of the enlightened standards set out in the text.

After the reader has mastered the overwhelming array of information, he will have in his mind a kaleidoscopic pattern of facts and figures, diagrams and photographs. These are certainly of great interest to the architect, but will hardly provide the handy reference 'tool' with which he may design a school, as claimed on the dust cover. One feels that much repetition could have been avoided by more methodical treatment and general simplification of the subject matter.

The second book, as the title indicates, is exclusively concerned with secondary schools, and the contents are clearly arranged and headed. The book begins by describing the background to secondary education in America, the various types of high schools, and the broad space standards which govern their design. Then come detailed recommendations, with exhaustive lists of factors governing selection of sites (which include picnics, golf courses, driving-instruction circuits, etc.). A number of specimen schedules of accommodation for different schools are fully set out. Although such schedules, if used outside their context, might be dangerous, they are, if prepared for each particular project, essential to the architect, who is often inadequately briefed in this country. Chapters follow devoted to detailed discussion, as in the other book, of various parts of the school: classrooms, auditorium, library; space for physical education, science, crafts, vocational training, music, home-making; cafeteria and administrative, storage and sanitary accommodation. Finally, there are check lists and pages of schedules of materials for internal surfaces. Physical requirements are only very lightly touched on. There are no photographs, and comparatively few, and not very inspiring, diagrams and plans.

The books are almost exactly the same size, but there is far more written material in the second, making it less interesting for architects to study, as the writing is repetitive and wordy. It is probably the more interesting book for those closely concerned with American secondary education, but does not give the English reader the vivid insight into the character of modern American schools, which the first book succeeds in doing.

It is clear that an enormous amount of thought, energy and time have been spent by the authors in the preparation of both these books, and they are splendidly produced, if sometimes carelessly edited. They should be regarded as a challenge to educators, architects and publishers in this country. A more concise book on this subject, a product of the co-operation of educators and architects, would surely be warmly welcomed by those carrying out the large programme of buildings for education.

D. L. MEDD [*A*]

The English Cathedrals, photographed by *Herbert Felton*, text by *John* [*H.*] *Harvey*. 8¾ in. xii + 99 pp. + pls. Batsford. 1950. 18*s*.

Architects are not unused to the architectural photography of Mr. Herbert Felton, and many will remember his contribution to the joint exhibition with Roger Fenton last year. Since 1938 Mr. Felton has concentrated on overcoming the difficulties which the vast tonal range inside a cathedral present to the photographer. It was his intention to produce a folio of photographs of the English cathedrals, but Mr. Harry Batsford had other ideas. He paired Mr. Felton with Mr. John Harvey, and the result is the kind of Third Programme book we have come to expect of Batsford in recent years.

The title is misleading, and it needs a page or so of the Introduction to explain the how and why of the selection of the 27 cathedrals covered. Mr. Harvey, of course, is a known enthusiast of Gothic England. In 76 pages, an appendix of notes on each of the included cathedrals, and some meaty, but repellingly dull, family trees showing the descent of major architectural features, he has been expected to consider the growth and development of the English cathedral as a unity and as the highest 'art-form' of the Middle Ages. The task is impossible, not only through lack of space, but because the restrictions imposed by the title exclude most of the monastic and greater churches, the inclusion of which is vital if such a treatment of English Gothic is to have real value. The momentous implications and achievements of Perpendicular have been stressed, but the connection between France, the Court School, Gloucester and the West, is of necessity insufficiently detailed. The gradual experiments which led from the bay unit of arcade, triforium and clerestory of the aisled plan to the embracing bay unit of the aisleless plan are given some attention, but not enough, since St. Stephen's and the later Royal Chapels are excluded. The ascription of works to individual master masons and the general reference to mediæval architects have been kept within bounds and are comparatively undidactic.

There are a few half-hearted references to the Victorian restorers. We have yet to read an adequate acknowledgment of the debt owed to Scott I, Street and Pearson for handing on to us cathedrals structurally sound, and for the munificence of the Victorians in financing these works. Our enjoyment of the cathedrals is in no small measure due to them. It would be easy to bring out a new Contrasts in which 19th-century work in our cathedrals would score heavily over the 20th.

Bath Abbey interior (152) loses much of its effect in this book, having been photographed whilst the glass was out of the east window, and York Minster choir (141) is depicted before the advent of Sir Walter Tapper's High Altar. The illustrations are on a lavish scale, but the standard of reproduction is unworthy of the photographs.

G. G. PACE [*F*]

The Building of Satellite Towns. A contribution to the study of Town Development and Regional Planning, by *C. B. Purdom*. New ed. 9¾ in. by 7⅝ in. xx + 532 pp. + front. + xxxiv pls. Dent. 1949. £2 10*s*.

In the main body of the book, which is addressed to all who are interested in new town development, Mr. Purdom tells the story of the founding and development of the two garden cities, Letchworth and Welwyn Garden City. All the important aspects of their development are described very fully; separate chapters are devoted to their establishment and growth, their town plan, shops, industries, public services, agriculture and finance. The text includes over 70 drawings of plans and layouts, and each garden city is illustrated by a useful set of photographs.

The book begins with a discussion on the nature of cities and satellite towns, and included is a delightful sketch of Ebenezer Howard and his contribution to the Garden City movement. As a general conclusion, the author discusses some of the practical problems of building new towns; an interesting series of notes, the text of the New Towns Act, 1946, and a good index complete the book.

Mr. Purdom is a firm believer in the importance of creating a satisfying environment, and he supports his views with a practical knowledge of the many-sided business of building a new town. He has been associated with the Garden City movement for very many years, and at one time was finance director of the Welwyn Garden City Ltd. The author is frank about the shortcomings of the two garden cities, which, it is worth remembering, have been built up to the halfway mark independantly of governmental support. Letchworth has been growing slowly for almost 50 years, and its future remains a private venture; Welwyn has grown rather more rapidly and is to be completed under the direction of a New Town Corporation, so it is an appropriate time for there to appear this very full history of the two garden cities. It should do much towards renewing a general interest in these pioneer new towns, where more has been successfully achieved than is fashionably recognized.

D. RIGBY CHILDS [*A*]

Middle Kingdom Art in Ancient Egypt, by *Cyril Aldred.* 7¼ in. viii + 56 pp. + pls. Tiranti. 1950. 6*s.*

A short while ago a companion volume, *Old Kingdom Art,* by the same author, was reviewed in these columns. Though self-contained, the present book marks the second stage in a survey by Cyril Aldred covering the whole field of Egyptian Art. The period treated is from 2,300 to 1590 B.C., and, with his eye mainly upon the sculptured remains, the author introduces us to some of the masterpieces surviving from these 800 years. He recognizes that the art of the Old Kingdom was striving towards a naturalistic ideal, but that in the Middle Kingdom this was 'rejected in favour of a more abstract formalism'. It is, therefore, instructive to note that the writer does not seek, as he did in the former volume, to enlist our appreciation of the formalized art of the Middle Kingdom by an appeal to modern æsthetic values.

Egyptian sculpture—Egyptian art generally—never emerges from the archaism of primitive thought. Development occurred in perfecting technique and not in emotional expression. The author puts his finger upon this when, speaking of the 12th Dynasty Court Art, he says: 'In conformity with the codifying and organizational character of that age, there was in fact less original diversity than is apparent in the preceding dynasty'. There is, in fact, only one way in which Egyptian art can profitably be introduced to the student—by approaching it, as Mr. Aldred has done, as a study of a changing, but scarcely progressing, social background.

Within these limits, further circumscribed by the uniformly small compass of this 'Chapters on Art' series, the author has contrived to give us an instructive picture of a phase of ancient art in which we have the first indications of the dominant characteristic of Egyptian civilization—a civilization which never grew to intellectual manhood. C.G.E.B.

Precautions Against Fire and Explosion in Underground Car Parks. By a *Joint Committee of the Building Research Board of the Department of Scientific and Industrial Research and the Fire Offices' Committee.* Ministry of Works. Post-war building studies, No. 28. 9¾ in. 36 pp. H.M.S.O. 1950. 1*s.*

Car parking is one of the most obvious of current town-planning problems. It is primarily a problem of the economic use of floor space, but where a planner tries to solve this problem by using basements or space under public streets and squares he is confronted with technical problems of fire and explosion hazard which may well baffle him.

In the United States the problem has been faced realistically; the hazards have been accepted and underground car parks as much as five stories deep have been built. But in London the conservatism of the L.C.C. has made the building of really buried car parks impossible by an insistence on the provision of 'explosion vents' giving direct connection between the parking compartment and the open air.

The report under review, undertaken by a sub-committee of the Joint Committee on the Fire Grading of Buildings as part of the larger problem of 'Fire Grading', analyzes the problem and approaches a proposed solution. It recognizes that, human frailty being what it is, the danger of explosion in a car parking compartment can never be entirely eliminated, but suggests that it is practicable to provide safeguards which reduce the danger to tolerable proportions without resorting to explosion vents.

There are three main dangers to be considered: the normal fire hazard enhanced by the presence of quantities of petrol and sparking devices; the explosion hazard resulting from the inevitable presence of petrol vapour (a danger which may be seriously enhanced by the spilling of petrol in some way); and the toxic danger which arises both from the petrol vapour and from exhaust gases.

One of the biggest problems facing the investigators was the establishment of suitable approximations as to the rate at which the gases would be evolved in practice, for it was necessary to fix a rate high enough to form the basis of sound safety calculations, but not so high as to be unrealistic and uneconomic.

The interesting and valuable conclusion was reached in paragraph 27 'that, in general, at least four or five [mechanical] air changes per hour will be required in car parks in which there is much traffic movement. It is to be concluded, therefore, that the provision of ventilation to meet the danger arising from carbon monoxide will ensure effective extraction of petrol vapour arising from petrol spilled over appreciable areas. . . . Ventilation based on the toxic limits of exhaust gases would generally be sufficient to deal with the toxic effect of vapour which would arise from petrol spilled over an appreciable area of the car park.'

From the planner's point of view the most vital conclusion reached (in paragraph 52) is that 'in view of the impracticability of providing sufficient area of vents to reduce the [explosion] pressures and impulses to a point at which the risk of structural damage can be ignored, . . . we consider that the strict observance of [the proposed good housekeeping] measures will make unnecessary the provision of explosion vents'.

The Report proceeds to recommend that underground car parks should be completely enveloped in fire resisting construction of specified grades, that where feasible they should be divided into fire-compartments so as to minimize the possible extent of a fire and to facilitate escape, and that they should be completely cut off from any buildings above them so as again to limit mutual fire danger: their use should be restricted to car-parking; filling and repair work should not be allowed.

Taken as a whole the Report, while not lifting the problem entirely beyond the range of 'scientific guess-work', affords a more rational and realistic basis for the design of underground car parks than has previously been available in this, or, indeed, any, country, and it is 'essential' reading for all town planners and architects who are concerned in any way with car parking arrangements.

STANLEY J. DOCKING [41]

Search for Form. A fundamental approach to art, by *Eliel Saarinen.* 9 in. xxiii + 354 pp. + 16 pls. New York: Reinhold. [1948.] ($4.50.)

Death has brought wide publicity to Eliel Saarinen's career and hosts of knowing fingers have pointed out its landmarks. The second half of his working life was spent at Cranbrook Academy in orderly retreat. Here, thanks largely to the generosity of certain business men from nearby Detroit, he was able to reflect at leisure on the nature of art, and to apply his conclusions in the instruction of the young and the creation of his own kind of architecture—an architecture that perhaps came closer to the new monumentality, so ardently sought by the critics, than the work of any of his contemporaries.

This book contains the ideas that moulded his life. For that reason alone it is important, although pretty hard going for the British reader unused to the foreign abstruseness of American dialect. He must be prepared to contend, for example, with such verbal obstacles as 'commuting at semester shiftings', when the author probably refers to travelling to and from school. This is the kind of language which is well enough no doubt among the hills and lakes of Michigan, but can not be comfortably exported. It is very likely better heard than read, a criticism that might be applied to several chapters of 'Search for Form'. One feels that they would make good lectures but, detached from the personality of the speaker, appear to contain tricks of phrase and emphasis unsuited to written words.

The volume was published when Saarinen was already 75 years old, an age when many successful men are content to look complacently back. This was not his way. Right till the end he was still looking keenly forward in search of the perfect architectural form to the pursuit of which he had dedicated his life. He was never the type to claim that he had found it.

Italy. Phots. by *K. Peter Karfeld.* Introd. [text] by *Harold Acton.* (The Countries in colour *series.*) 11¾ in. by 9¾ in. 16 pp. 43 pls. map. Batsford. 1950. £1 7*s.* 6*d.*

As a collection of photographic colour plates of views chosen from the standpoint of landscape and light, this book is excellent. Most of the illustrations have architectural interest, too, although a few are purely nature studies.

Harold Acton, Florentine and poet, a man of exuberant prejudices and acute artistic sensibility, writes an eloquent, informative and appropriately nostalgic introduction. J. C. P.

Colonial Architecture and Sculpture in Peru, by *Harold E. Wethey.* 10½ in. xv + 330 pp. + 216 pls. Harvard University Press. 1949. £5.

We are told that there is a demand for books which offer an escape either to a remote part of the earth or to another period in history less tormented than ours. This one certainly provides both those forms of release; first, by taking us to Peru—one of the most distant countries from Britain—and, secondly, by introducing us to an architectural contribution which, in course of time, may be compared favourably to that made by the 13th century church builders in France. I use the word 'introducing' purposely, because the thing has come to me at least as something of a shock, mixed with delight at its discovery. It is true that there has been—ever since Geoffrey Scott pointed the way—a tendency to admit that Baroque is not so wicked as we supposed. Such men as Henrico Zuccalli of Munich, for instance, are accepted as architects who achieved *something*. They were not necessarily decadent; and, that being so, such a massive outcrop of the baroque rock as this on the other side of South America deserves attention. It is also a tonic to be told about a period and a country in which architects had such a glorious time—building their heads off, so to speak.

This country Peru, touching the Pacific for about 1,800 miles, is almost wholly occupied by the high ridges of the Andes. Its civilizations have developed therefore most fully in valleys and on plateaux thousands of feet above the sea. Pizarro's aggression and conquest of the Incas in 1531 had a notable effect on art. For, by 1560, enormous wealth was being drawn from the silver and mercury mines. As well, the *régime* was undemocratic. Aristocracy ruled; and great privileges accrued to a few people only, including the Bishops and heads of Religious Orders—a state of affairs which has always encouraged architecture. The tough Dominicans, enduring great hardships to convert the Indians, built the simple early churches; and, a little later, the Jesuits brought with them the full blast of Counter-Reformation art. It is the impact of this Spanish culture on the Incaic civilization which is so admirably displayed in his book by the Professor of Fine Arts in the University of Michigan.

It seems the first buildings were designed by modest artisans. A mason, Diego de Torres, conceived the Town Hall at Lima, and combined his profession with the trade of selling soap. The first real architect was Francisco Becerra, called by the Viceroy from Spain to Peru, after nine successful years in Mexico. And Cuzco, the Inca capital, rapidly produced a group of very handsome churches, all nearly as large as Exeter Cathedral. Why have we not been told more of this before? Is it because the place is so very remote? Or is it because—as in the works of reference—only the Inca remains are referred to? These are doubtless as impressive as much to be found in Egypt; but we discover at Cuzco, standing often on them and using them as foundations, great ecclesiastical edifices, carried out—not in stucco—but in the same brown stone as their predecessors. This place, which Professor Wethey describes as one 'of breath-taking beauty', lies in a valley at an altitude of 11,000 ft. Still higher mountains rise all round, competing with the Cathedral. This was finished in 1657 and the author claims it to be the finest church in the Western Hemisphere.

Fergusson says that Juan de Herrera did for Spanish architecture what Palladio and Vignola did for the architecture of Italy. What he means is that they were linked by a cold formality. Palladio had, I consider, more merit than that. But, in any case, it was the Spaniard's great cathedral at Valladolid—a rectangle 400 ft. by 250 ft.—which gave a pattern to these buildings in South America. The type is well illustrated by the church at Morelia, so well drawn by Mr. Briggs in his *Baroque Architecture* (p. 194). Cuzco Cathedral is another instance. A very wide front has a belfry standing on each end of it But, below those features, the walls are almost windowless and quite plain except in the centre, where the universal *rétable* treatment of the main entrance explodes in an intensely rich composition right up to the roof level. Just as Longhena and others in Italy threw down the restrictions set by Palladio, so the Peruvians, like their Spanish masters, break out into the most fantastic Churrigueresque. Yet even these astonishing designs vary in their degree of fantasy. One can discover unexpected merit in the dynamic lines of some of the compositions photographed in this book. It is, in fact, a very stiff exercise to try to translate one of them into a working drawing: and most interesting, because one finds that these whirling lines are arranged most dextrously to give the essential harmony as well as an excessively vivid effect. The more purely sculptural work varies too in clarity and beauty. For instance, the High Altar of Santa Catalina at Cuzco has a rich dignity when compared with the twiddled confusion of the equally large feature at the other church of San Blas.

Yet, even this rococo rioting is not the end of the interest. For the so-called Mestizo art is the result of a cross-breeding between the European and the indigenous influences. The finest example is undoubtedly the church of Santiago at Pornata on Lake Titicaca. Built entirely of rose-coloured stone about 1710, it displays curiously beautiful imaginative qualities in its very rich and almost Byzantine surface decoration.

What I have written here gives only a slight indication of the value of this book. I should add that it exhibits these unrealized splendours in 366 photographs, discusses them in a pleasantly learned text of 300 pages and provides a Bibliography, Notes, and Index and a very clear map. Yet, while enjoying it, an architect is likely to find something lacking, due to the fact that there are only 20 small plans of the churches with no scales attached. One regrets that so much *architecture* is dealt with almost wholly pictorially. Even a dozen measured drawings of the most impressive parts of a few selected buildings would put the book in the first rank among expositions of dramatic —but, now and then, very high-class— design. A. S. G. BUTLER [F]

Crusader Castles, *&c.*, by *Robin Fedden.* 8¼ in. by 6½ in. 64 pp. + front. + (32) pls. text plans. Art and Technics. 1950. 15*s*.

In a charmingly written and all too short book Mr. Fedden has described some of the most impressive scenes to be found anywhere in the world, where giant castles —so homely to English eyes—tower in ruin above the ragged rocks and stunted trees of the Holy Land. His knowledge of the country has enabled him not only to appreciate the historical background of these deserted fortresses, but also the part played by local masons, Moslem and Byzantine, in raising their mighty walls. Although he has most tantalisingly restricted his treatise so that we are allowed as it were only an introduction, Mr. Fedden is able to give us many appealing glimpses into the lonely lives endured by the Crusader castle-men; his descriptions of the warfare which swayed around their towers, and in particular the insidious 'castle mentality' which gradually ruined the moral of their garrisons shows that he is as absorbed in his subject as he would wish us to be. I think he is mistaken in one vital architectural detail when he speaks of the narrow loops which were the military form of the mediæval window as if they were employed as loopholes in the modern sense; the bow was surely only used from the crenellated fighting-tops on the summit of the walls, hence the significance of the 'licence to crenellate'. I should have preferred the distribution map on p. 17 to have been on a much larger scale, but the book is amply and strikingly illustrated by a series of fine photographs which not only show much architectural detail, but by means of aerial views enable us to obtain a good impression as to the general situation and lay-out of the buildings described. A very notable publication indeed, and one which will surely whet the appetite for something more concerning the castles of the Crusades as explored by Robin Fedden. HUGH BRAUN [F]

The Gothic Revival. An essay in the history of taste, by *Sir Kenneth Clark.* Revised ed. 8 in. viii + 321 pp. + 8 pls. Constable. 1950. 15*s*.

Few changes have been made to the original text for this new edition of what Sir Kenneth modestly dismisses as 'a period piece'. But Messrs. Betjeman and Piper have, we learn, had an advisory hand in most of them, and some of us will not be seriously dismayed about that. For the benefit of the youngest generation it may be worth repeating the author's warning that this is not an exhaustive text-book on neo-Gothic architecture. They will find it well worth reading, however—a singularly compact and lucid piece of learned writing. J. C. P.

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Greenwood, £2 2*s*.; V. L. Johnson, £1 1*s*.; M. Tapper, £1 1*s*.; M. Hutchinson, £3 3*s*.; A. L. N. Russell, £1; H. Lynn, £2 2*s*.; A. R. Meldrum, £1; Thos. Callender (G. N. Twist), 10*s*.; A. T. Marshall, £1 1*s*.; J. C. Ratcliff, £1 1*s*.; J. Houston, £1 1*s*.; Miss E. B. Alexander, £1 1*s*.; Anderson, Forster and Wilcox, £3 3*s*.; G. S. Henman, 2*s*. 6*d*.; Culpin and Son, £5 5*s*.; R. D. Herbert, £1 1*s*.; H. B. Archer, £1 1*s*.; R. J. Naismith, 10*s*.; R. Frankland, £1 1*s*.; Sir T. P. Bennett, £25; W. N. Wright, £1 1*s*.; R. H. Riddle, 5*s*.; S. B. Pritlove, £5 5*s*.; Miss K. Gibbons, £1; Michael F. Tilley, £1 1*s*.; F. Gibson, 10*s*. 6*d*.; Jackson and Jackson, £1; E. W. Hainstock, 5*s*.; H. J. Harvey, £2 2*s*.; R. L. Clark, 10*s*. 6*d*.; J. S. Comper, £5 5*s*.; G. N. Hill, £2 2*s*.; W. Curtis Green, Son and Lloyd, £5 5*s*.; R. C. Lusty, 10*s*.; Hon. Claud Phillimore, £1 1*s*.; J. R. Beloff, 10*s*. 6*d*.; Wimperis, Simpson, Guthrie and Fyffe, £10 10*s*.; J. A. O. Allan, Ross and Allan, £10; Brian O'Rorke, £10; Thomas Trepess, £1 1*s*.; Sir Arnold Thornely, £5; F. G. M. Butlin, £2 2*s*.; D. A. Calow, 5*s*.; T. L. Bright, £1 1*s*.; L. Allen, £5 5*s*.; A. H. Moberly, £5 5*s*.; J. S. Scott, £1 1*s*.; G. F. Webb, £5 5*s*.; A. H. Boss, 10*s*.; H. G. Burley, £2 2*s*.; George Laird, £1 1*s*.; W. Keay, £5; H. A. Davies, 10*s*. 6*d*.; J. H. Hayes, £2 2*s*.; Beckett and Harrington, £2 2*s*.; W. J. Wilding, 7*s*. 6*d*.; F. J. Tingey, 10*s*.; Ramsey, Murray and White, £5 5*s*.; Eric Cole, £3 3*s*.; C. H. Crane, £5 5*s*.; B. J. Sweeney, 5*s*.; H. Mortimer, £1; C. E. Pearson, £5 5*s*.; R. J. Duke, £1 1*s*.; Robinson, Keefe and Devane, £5; Stevenson and Ferguson, £1 1*s*.; F. F. Murphy, £1; C. R. Glover, £1 1*s*.; R. B. Dick, £10; Sir H. Baker and Scott, £10 10*s*.; Maxwell Ayrton, £5 5*s*.; D. du R. Aberdeen, £3 3*s*.; T. A. Fitton and Son, £2 2*s*.; E. V. Ive, 10*s*.; H. Conolly, £1 1*s*.; G. Lindsay, 5*s*.; W. Munro, £2; C. Lush, £2 2*s*.; A. R. Twentyman, £5 5*s*.; R. Shaw, £1; J. P. Darby, £2 2*s*.; R. Sharpe Hill, £2 2*s*.; H. L. Honeyman, £1 1*s*.; Joyce M. Edmunds, 7*s*. 6*d*.; Stanley Hamp, £5; Paul Badcock, £3; E. J. Price, 3*s*.; D. Wynne Thomas, £5; Searl and Searl, £5 5*s*.; W. Dean, 10*s*. 6*d*.; D. H. Seabrooke, £1 1*s*.; C. E. Taylor, £2 2*s*.; H. Holland, £1 1*s*.; R. N. Warriner, £1 1*s*.; H. H. Ford, £2 2*s*.; Architects' Co-operative Partnership, £5; F. K. Davies, £1 1*s*.; G. W. Warr, £1 1*s*.; M. Seth-Ward and Partners, £2 2*s*.; A. E. Harris, £1 1*s*.; A. Lamb, 5*s*.; C. S. B. Smith, £1 1*s*.; G. H. Nicholls, £2 2*s*.; S. A. E. Joh, £1 11*s*. 6*d*.; W. J. Thrasher, £1 1*s*.; W. S. Willis, £3 3*s*.; R. E. Enthoven, £2 2*s*.; Cocksedge and Co., Ltd., £5 5*s*.; Anonymous, £10 10*s*.; G. Ford, £1 1*s*.; Mrs. Casson, £2 2*s*.; Major and Mrs. Q. Mangnall Bluhm, £2 2*s*.; P. S. Hudson, £1 1*s*.; R. A. Agascar, £1 1*s*.; Norman Dent, £1 1*s*.; Mrs. E. M. Thomas, £1 1*s*.; B. C. C. Hastings, 5*s*.; C. H. Wood, 2*s*. 6*d*.; Crickmay and Sons, £3 3*s*.; N. M. Phillips, 10*s*.; K. M. B. Cross, £2 2*s*.; G. H. Perriam, 10*s*.; H. Farquharson, £5; J. M. Slater, £2 2*s*.; C. Pascall, £1 1*s*.; S. Clough, £5 5*s*.; W. H. Martin, 10*s*.; P. Cherry, £1 1*s*.; A. Lloyd Spencer, £1 1*s*.; J. M. Bargman, £1 1*s*.; B. A. Williamson, £1 1*s*.; Sir George Stott, £2 2*s*.; Miss K. M. Heath Eves, £1; Fred Riley (Brameld and Smith), £2 2*s*.; J. M. G. Griffiths, £2 2*s*.; W. Meadows, £2; A. F. A. Trehearne, £5 5*s*.; . Nightingale, £1; G. W. Yeats, 10*s*.; A. C. P. Smith, 5*s*.; Mrs. C. Sommer, 5*s*.; J. A. Slater, £10 10*s*.; Institute of Registered Architects: (F. G. Haydon, £2 2*s*., Sir Robert Frazer, £2 2*s*., Sir H. Selley, £8 8*s*., Anonymous, £2 2*s*., C. W. Kempton, 10*s*., Lord Buckmaster, £2 2*s*., Vyvyan Hicks, £3 3*s*., A. G. V. Newnham, £5 5*s*.) £25 14*s*.; R. Fermor, £3 3*s*.; E. M. Bullock, £1 1*s*.; J. R. Hobson, 5*s*.; G. C. Pyne, £1 1*s*.; Stillman and Eastwick-Field, £1 1*s*.; E. A. Burne, £1 1*s*.; J. S. Hirst, 5*s*.; J. S. Millar, 10*s*. 6*d*.; S. W. Midwinter, £1 1*s*.; Dick, Peddie, McKay and Jamieson, £4 4*s*.; F. Joy, £2 2*s*.; R. Angell, £5 5*s*.; Miss E. F. Stronach, £2 2*s*.; Jas. Shearer, £3 3*s*.; Samuel Jackson and Son, £4; Covell and Matthews, £2 2*s*.; W. J. Gilchrist, 5*s*.; Starr Hall and Clifford, £25; K. D. Box, £2 2*s*.; Lewis Solomon and Son, £100; Canterbury Chapter, South Eastern Society of Architects, £28 8*s*. 6*d*.; J. S. Hartley, £1 1*s*.; J. Rowbotham, £1 1*s*.; S. Spollon, 5*s*.; Nelson Garton and Co., £1; W. V. Jenkins, 10*s*.; W. R. Davidge, £2 2*s*.; J. T. Walker, £3 3*s*.; E. S. Ambrose, £5 5*s*.; Guildford Chapter, South Eastern Society of Architects, £26 5*s*.; A. N. Hort, £2 2*s*.; S. Kadleigh, £1 1*s*.; Johnston and Baxter, £2 2*s*.; Mrs. D. E. Butler, 5*s*.; E. G. Ward, 10*s*.; Miss Z. T. Maw, 2*s*. 6*d*.; L. W. Lindars, £3 3*s*.; C. Woodward, £10 10*s*.; Norfolk and Norwich Association of Architects, £105; G. R. Dawbarn, £5; A. J. Newton, 10*s*.; J. Robinson, 2*s*. 6*d*.; A. H. Powell, £1 1*s*.; J. S. Thomson, £1 1*s*.; G. W. Hart, £1 1*s*.; W. J. D. Mead, 5*s*.; R. C. Goymour, £1 1*s*.; Body, Son and Fleury, £6 6*s*.; J. C. Ogg Allan, £1 1*s*.; T. H. Thoms, £2 2*s*.; J. D. Nairn, £1 1*s*.; A. C. Day, 5*s*.; West Essex Chapter, Essex, Cambridge and Herts Society of Architects, £5 5*s*.; G. B. Cox, £5 5*s*.; G. Stanwell, £5; L. Kenyon Watson, £1 1*s*.; A. Bailey, £2 2*s*.; J. Gillis, £5 5*s*.; P. Dangerfield, £3 3*s*.; H. A. Wakeford, £2 2*s*.; K. D. Bundy, 10*s*.; R. O. Hall, £1; Miss B. Y. Underwood, 5*s*.; E. G. Broughton, 5*s*.; F. G. Cole, £1 10*s*.; W. F. Dickinson, £3; E. Duley, £1 1*s*.; J. R. Tomlinson, £1 1*s*.; Benz and Williams, £2 2*s*.; G. A. Goldstraw, £1; S. E. Minns, £5 5*s*.; W. A. Guttridge, £5 5*s*.; R. Barrington Smith, £1 1*s*.; Tunbridge Wells Chapter, South Eastern Society of Architects, £5 14*s*. 2*d*.; C. J. Cable, £5; J. W. Little, £10 10*s*.; Hickton, Madeley and Scott, £2 2*s*.; A. F. Girling, £1. Total to 4 December, £2,966 2*s*. 5*d*.

Notes and Notices

NOTICES

Fourth General Meeting, Tuesday 9 January 1951 at 6 p.m.

The Fourth General Meeting of the Session 1950-51 will be held on Tuesday 9 January 1951 at 6 p.m. for the following purposes:

To read the Minutes of the Third General Meeting held on 12 December 1950; formally to admit new members attending for the first time since their election.

To read the Council's Deed of Award of Prizes and Studentships 1951.

Mr. H. S. Goodhart-Rendel, Mus.B.Cantab., M.A.Oxon., Past-President, to read a paper on *Draughtsmanship of the Past*.

(Light refreshments will be provided before the meeting.)

Session 1950-51. Minutes II

At the Second General Meeting of the Session 1950-51, held on Tuesday 28 November 1950 at 6 p.m.

Mr. A. Graham Henderson, A.R.S.A., President, in the Chair.

The meeting was attended by about 180 members and guests.

The Minutes of the Inaugural General Meeting held on Tuesday 14 November 1950 were taken as read, confirmed and signed as correct.

The following members attending for the first time since their election were formally admitted by the President:

AS FELLOWS

Bernard F. Matthews, P. S. P. Morter, G. Edric Neel, Bryan P. Westwood.

AS ASSOCIATES

E. A. J. Baynes, E. S. Boswell, H. D. R. Buck, D. E. Chapman, D. H. Crump, D. B. Doe, A. H. Donnan, Mark Fenton, Malcolm Freeland, William Garner, P. A. Geers, K. J. I. Greenslade, M. B. Hartley, Mrs. J. M. Home, Gilbert P. Howes, J. C. Irwin, W. P. Johnstone, F. O. Jones, P. E. Kerr, F. Kerr-Lucarotti, M. S. Kharkar, D. W. Killeen, R. A. B. Kind, D. J. Lloyd, D. G. Manning, Miss B. M. Marshall, M. J. Miller, P. W. Mooton, D. W. Morecombe, D. G. I. Purves, R. H. Sidwell, Murray Simons, D. H. Spall, R. C. Steel, Kenneth Steen, R. A. Thomas, W. D. Topping, G. T. Trinder, D. H. R. Watson, G. F. Weed, D. G. Wickens, H. C. S. Workman, D. A. Wren, C. W. H. Wright.

AS LICENTIATES

T. J. Finch, C. J. Mills, D. W. F. Smith.

The President announced that the meeting had been called to discuss the reports of the Anglo-American Productivity Building team and the Working Party on Building Operations, and called on Mr. Michael Waterhouse, M.C. (Past-President), and Mr. Robert H. Matthew [*A*], Architect to the London County Council, who were the architect members of the Anglo-American Productivity team, to speak on the reports generally.

Mr. Waterhouse and Mr. Matthew having spoken, the President called on Mr. Thackray, one of the quantity surveyor members, and Mr. N. Stanley Farrow, M.B.E., one of the builder members of the American Mission, to open the discussion.

A discussion ensued, and on the motion of Mr. Robert O. Lloyd, O.B.E., President of the National Federation of Building Trades Employers and leader of the Anglo-American Productivity team, seconded by Mr. Walter R. Cowen, President of the Federation of Associations of Specialists and Sub-Contractors, and a member of the team, a vote of thanks was passed to Mr. Waterhouse and Mr. Matthew by acclamation and was briefly responded to.

The proceedings closed at 8 p.m.

British Architects' Conference, Belfast, 30 May-2 June 1951

The next Annual Conference of the R.I.B.A. and its Allied and Associated Societies will take place at Belfast from 30 May to 2 June 1951. Further details will be published in due course.

Forms of Agreement for Use between a Building Owner and an Architect

Members are reminded that, on the recommendation of the Practice Committee, the Council have approved the publication of Forms of Agreement in the three following editions:

(i) *Form of Agreement for General Use between a Building Owner (including a Statutory Authority) and a Firm of Architects;*

(ii) *Form of Agreement between a Local Authority and a Firm of Architects for Housing Work;*

(iii) *Form of Agreement between a Local Authority and a Firm of Architects for Multi-Storey Flats.*

In addition, on the recommendation of the Competitions Committee, the Council have approved a *Form of Agreement between the Promoters and a Firm of Architects appointed as the result of a Competition.*

The respective Forms have been carefully designed to include all the essential points on which a clearly defined agreement between a Building Owner and an Architect is needed, and to omit many irrelevant and repetitive clauses which, in the experience of the Institute, are so frequently inserted.

The four documents are now available in printed form, and may be obtained on application to the Secretary, R.I.B.A., 66 Portland Place, London, W.1 (price 6*d*. per copy).

BOARD OF ARCHITECTURAL EDUCATION

Examinations Recognized for the Probationership

Except where otherwise stated no particular subjects are required to be covered by a certificate of having passed an examination recognized.

1. The entrance examination of the Schools of Architecture recognized by the R.I.B.A. for the purpose of exemption from its examinations. (Only for those students taking the recognized courses in such Schools.)
2. The Responsions of the University of Oxford.
3. The Previous Examination of the University of Cambridge.
4. The Matriculation Examination at any University in the British Empire.
5. The Senior Certificate Examination of the Ministry of Education, Northern Ireland.
6. The Common Preliminary Examination of the Engineering Joint Board.
7. The Preliminary Examination of the Institution of Chartered Surveyors.
8. The School Leaving or equivalent Certificate recognized as qualifying for admission to the Universities of Agra, Aligarh, Andhra, Annamalai, Benares, Bombay, Calcutta, Dacca, Delhi, Lucknow, Madras, Mysore, Nagpur, Osmania, Patna, Punjab, and Rangoon.
9. The General Certificate of Education, provided that it covers the following subjects: (1) English (Language), (2) Mathematics (Elementary), and *either* three of the following if all five subjects are taken at 'ordinary' level, *or* two of the following if at least one of the four subjects is taken at the 'Advanced' level: (*a*) A Modern Language, other than English, (*b*) Physics, (*c*) Chemistry, (*d*) Physics with Chemistry, (*e*) Mechanics, (*f*) General Science, (*g*) History, (*h*) Geography, (*i*) Economics, (*j*) A Mathematical subject other than Elementary Mathematics or Arithmetic, (*k*) Latin, (*l*) Greek, (*m*) English Literature, (*n*) Art.
10. The Scottish Leaving Certificate provided that it is endorsed with a pass on at least a lower grade in (1) English, (2) Mathematics, and three of the following if all five are taken on the lower grade or two of the following if at least one of the four subjects is taken on the higher grade: (*a*) A modern language other than English, i.e. French, German, Italian, Spanish, Gaelic, Russian or Hebrew, (*b*) Science, (*c*) Physics with Chemistry, (*d*) Physics with any other approved branch of science, (*e*) Chemistry with any other approved branch of science, (*f*) History, (*g*) Geography, (*h*) 'Additional' Mathematical subjects, (*i*) Latin, (*j*) Greek, (*k*) Art.
11. The Leaving Certificate Examination of the Department of Education, Eire, provided that it covers the following subjects: (1) English (Language), (2) Mathematics (Elementary), and three of the following subjects provided that at least three altogether are passed at the honours standard: Irish, Latin, Greek, French, German, Italian, Spanish, History, Geography, Applied Mathematics, Physics, Chemistry, Physics and Chemistry, General Science.
12. The Senior Certificate Examination of the College of Preceptors, provided that it covers English Language, and Mathematics (an aggregate percentage in Arithmetic, Algebra and Geometry combined), and four of the following subjects provided that credit standard or 50 marks are gained in five out of the six subjects: English Literature, French, German, Latin, History, Geography, Art, General Science, Chemistry, Physics (Light and Heat *or* Magnetism and Electricity).

All applicants, except those referred to in Section 1 above, must submit in support of their applications drawings, including freehand drawings, and sketches, to show that they possess some knowledge of drawing.

Note A: It is recognized that some applicants will have been at school before the introduction of the General Certificate of Education. Such applicants may submit School or Higher School Certificates, which need not cover any specified subjects.

Note B: The Forces Preliminary Examination will be discontinued at the end of 1951, but a certificate of having passed this examination will be accepted in support of an application. Consideration will also be given to the acceptance of a Modified or Supplementary Certificate awarded in 1951.

Note C: Any Senior Certificate of the College of Preceptors gained up to and including 1952 will be accepted, but certificates gained in 1953 and subsequently must cover the specified subjects in order to be accepted.

COMPETITIONS

'The Builder' Low-cost Housing Competition

THE BUILDER invites architects registered in the United Kingdom, who may collaborate with members of allied professions and the building industry, to submit designs in competition for a terrace house to accommodate two adults and three children, to cost not

more than £1,000 exclusive of land, roads and sewers. It should be noted that the competition is for designs only.

Assessors: Sir Lancelot Keay, K.B.E., M.Arch. [*P.P.*], Mr. Arthur W. Kenyon, C.B.E., M.T.P.I. [*F*], Sir Stephen Tallents, K.C.M.G., C.B. [*Hon. A*].

Premiums: Total £500.

Last day for submitting designs: 17 January 1951.

Conditions may be obtained on application to The Editor, THE BUILDER, The Builder House, Catherine Street, Aldwych, W.C.2.

Deposit £2 2*s*.

Festival of Britain 1951: Committee for Northern Ireland

(*a*) *Competition for Design of Hotel.*

(*b*) *Competition for Design of a Recreation Centre.*

The Royal Society of Ulster Architects in association with the Council for the Encouragement of Music and the Arts (Northern Ireland) invite members and Students of the R.I.B.A. and its Allied Societies and/or Registered Architects *born or normally resident in Northern Ireland* to submit designs in competition for:

(*a*) A Seaside Hotel. Premiums: £200, £100, £50.

(*b*) A Recreation Centre. Premiums: £100, £50, £25.

Assessor: Mr. Desmond FitzGerald, B.Arch., M.R.I.A.I., A.M.T.P.I. [*A*].

Last day for submitting designs: 31 March 1951.

Although it is unlikely that these subjects will be built they have been carefully selected to meet a known need.

Separate schedules of conditions are available in respect of each competition, and these may be had on application to the Hon. Secretary, Royal Society of Ulster Architects, 7 College Square North, Belfast, enclosing a deposit of £1 1*s*. in respect of each schedule of conditions required.

ALLIED SOCIETIES

Changes in Officers and Addresses

Wilts and Dorset Society of Architects (*Branch of the Wessex Society of Architects*), Hon. Secretary, Mr. E. Weston Stanley [*A*], County Architect's Department, County Hall, Dorchester.

West Yorkshire Society of Architects—Wakefield Branch. Chairman, Mr. H. Bennett [*F*], 24 North Grange Road, Headingley, Leeds, 6. Hon. Secretary, Mr. I. M. Hindle [*A*], 6 Oakwood Grove, Horbury, Wakefield.

Buckinghamshire Society of Architects. Change of address of Hon. Secretary, Mr. W. Leslie Jones [*L*] from 87 High Street, Great Missenden, to 21 High Street, Great Missenden.

South Australian Institute of Architects. President, Mr. K. M. Yelland, Messrs. Russell and Yelland, 44 Grenfell Street, Adelaide.

Devon and Cornwall Architectural Society—Truro Branch (newly formed). Chairman, Mr. Sydney Gregson [*F*], County Architect, County Hall, Truro, Cornwall. Hon. Secretary, Mr. J. H. Crowther [*A*], Cornel, Tremorvah, Tregalls Road, Truro.

Liverpool Architectural Society Annual Dinner

A most successful Dinner was held at the Adelphi Hotel, Liverpool, on 17 November 1950, when the Liverpool Architectural Society, under the presidency of Col. F. C. Saxon, M.C., J.P., F.R.I.C.S. [*F*], entertained about 120 guests. Amongst the principal guests were:—

The Lord and Lady Mayoress of Liverpool (Ald. the Rev. H. D. Longbottom and Mrs. Longbottom); the President of the R.I.B.A. (Mr. A. Graham Henderson, A.R.S.A.) and Mrs. Henderson; the Mayor and Mayoress of Chester (Mr. P. H. Lawson, J.P., F.S.A. [*F*]) and Mrs. Lawson; the Archbishop of Liverpool (the Most Rev. R. Downey, D.D., Ph.D., LL.D. [*Hon. F*]); Mr. C. D. Spragg, C.B.E., Secretary, R.I.B.A.; and the Presidents of the Manchester Society of Architects, Birmingham and Five Counties Architectural Association, Nottingham, Derby and Lincoln Architectural Society, North Wales Architectural Society, North Staffordshire Architectural Association, together with Presidents of numerous local institutions.

The toast of the Liverpool Architectural Society was proposed by the President of the R.I.B.A., Mr. A. Graham Henderson, and the response was made by the President of the Liverpool Architectural Society, Col. F. C. Saxon. The toast of the City of Liverpool was proposed by the Rt. Worshipful, the Mayor of Chester, Mr. P. H. Lawson, and the response was made by the Lord Mayor of Liverpool (Alderman the Rev. H. D. Longbottom). The toast of the guests was proposed by Mrs. Joan Wilson [*A*], and was responded to by the President of the Liverpool Law Society, Mr. D. H. Mace.

Devon and Cornwall Architectural Society Annual Dinner and Ball

The Fourteenth Annual Dinner and Ball of the Devon and Cornwall Architectural Society was held on 10 November in Plymouth. The President of the Society, Mr. H. J. Hammick [*L*], was in the chair, and Mr. A. W. Kenyon, C.B.E., M.T.P.I. [*F*], responded to the toast of the R.I.B.A. proposed by the Lord Mayor of Plymouth. Mr. H. J. Hammick responded for the Devon and Cornwall Architectural Society.

Among other guests were Mr. F. G. Radford, Area Chairman, South-Western Federation of Building Trades Employers, and Group Captain C. L. Pendlebury, F.R.I.C.S., President of the Land Agents Society. The toast, 'Our Guests', was proposed by Mr. L. F. Vanstone [*L*], Junior Vice-President of the Society.

Devon and Cornwall Architectural Society—Truro Branch

The Inaugural Meeting of the Truro Branch of the Devon and Cornwall Architectural Society was held in Truro on Friday 17 November 1950. Mr. H. J. Hammick [*L*], President of the Society, was in the chair. Mr. Sydney Gregson [*F*] was elected first chairman of the Branch. It has started with a membership of 64. In addition to the chairman the following officials were also elected: Vice-Chairman, Mr. J. V. Salisbury [*F*]; Honorary Secretary and Treasurer, Mr. J. H. Crowther [*A*]; Representative to the Allied Societies Conference (1951), Mr. J. H. Crowther [*A*]; Deputy, Mr. Sydney Gregson [*F*].

South-Eastern Society of Architects Annual Students' Day

Students from all parts of Kent, Surrey and Sussex, their school staffs and many members of the profession, about 160 in all, assembled in the King Charles Hall, Tunbridge Wells, on 13 October to hear a criticism of the work submitted for the Society's Annual Competitions. The competitions were started long before the War to encourage students working in offices to develop their capacity as draughtsmen and their skill as designers. The promotion of the competitions is in the hands of a body appointed by the Society as an 'Education' Committee. Fifty-seven sets of drawings were exhibited, and their authors were presented with prizes by Mrs. S. J. Egerton-Banks, whose husband, the Regional Director of Works, as chief speaker, exhorted them to form themselves, not as narrow specialists, but upon the Grecian ideal of the whole man and as leaders.

Mr. Cecil Leonard Burns [*F*], President of the Society, welcomed the visitors and thanked the Ministry of Works for its help in the mounting of the Exhibition, while Mr. J. L. Denman [*F*] emphasized the importance of using their time at school for a realistic study of their art rather than a 'paperchase' after current fashions out-of-date before they are established. The highlight of the occasion was the criticism by Mr. Edward D. Mills [*F*].

The prize-winners were as follows: Senior Design—'A School for Crippled Children: 1st, M. R. Taylor (Canterbury); 2nd, J. Berresford (Canterbury) and G. W. Ferguson (Rochester). Junior Design—'A River Bus Station': 1st, R. L. Guy (Brighton); 2nd, J. C. Haskell (Kingston). Junior Measured Drawing: 1st, J. C. Williams (Canterbury); 2nd, A. Whitaker (Rochester). Best Finals Testimony: D. W. Vane (Canterbury). Best Set of Intermediate Testimonies: R. Allen (Rochester and Canterbury). Sketching: 1st, M. R. Taylor (Canterbury); 2nd, Anne Satterley (Canterbury).

GENERAL NOTES

A.R.C.U.K.—Maintenance Scholarships in Architecture

The Architects' Registration Council of the United Kingdom offer for award in June 1951 certain Maintenance Scholarships in Architecture. The Scholarships will consist of a grant for the payment of one-third of the School fees and, when necessary, a maintenance allowance. The Scholarships will be renewable from year to year until the student has finished his or her School training. They will be available for Students of British nationality who could not otherwise afford such training to enable them to attend Architectural Schools approved by the Council. The Scholarships will be available both for students who have already begun their training and for students wishing to begin their training. Scholarships will not be granted to Students who will be less than 17 *years of age on* 1 *October of the year in which the examination is taken.*

Particulars and forms of application may be obtained from: The Secretary to the Board of Architectural Education, Architects' Registration Council of the United Kingdom, 68 Portland Place, London, W.1.

Copies of previous years' examination papers may be obtained on payment of 6*d*.

The closing date for the receipt of applications, duly completed, is 31 January 1951.

The Society for the Protection of Ancient Buildings

The Society has recently decided to increase the number of scholarships which it awards annually in memory of the late W. R. Lethaby to five. The scholarship is offered to enable students to gain a first-hand knowledge of methods used by the Society in the treatment and repair of old buildings. Recent awards have been made to Miss Pamela Cunnington [*A*], Miss Janet P. Furney, Mr. Donald Insell, Mr. Peter Locke and Mr. Cecil J. Searle [*A*].

The Society feels that present times demand that a still larger number of awards should be made, and is convinced that traditional craftsmanship can be understood and sympathetically preserved only by practical experience on the job: these facilities afforded through the Society's scholarship can only be made possible if additional funds are available.

The Society appeals therefore for the necessary financial support to enable it to extend its scheme for specialized training of the young architectural student.

Donations should be sent to the Secretary, S.P.A.B., 55, Great Ormond Street, London, W.C.1.

Notes from the Minutes of the Council

MEETING HELD ON 14 NOVEMBER 1950

Appointments

(A) R.I.B.A. Architecture Bronze Medal: The Northamptonshire, Bedfordshire and Huntingdonshire Association of Architects. Appointment of R.I.B.A. Representative on Jury to consider the Award: Mr. T. W. Haird [*F*], President of the Leicestershire and Rutland Society of Architects.

(B) International Association of Bridge and Structural Engineers: Congress 1952: R.I.B.A. Representation: Mr. Arthur Bailey, O.B.E. [*F*], in place of Mr. Graham R. Dawbarn, C.B.E. [*F*].

(C) Rotherham Technical College: Building Advisory Committee: Appointment of R.I.B.A. Representative: Professor Stephen Welsh [*F*].

(D) R.I.B.A. Representatives on B.S.I. Committees: (i) *Committee FHB/4: Dairy Buildings:* Mr. A. H. Neave [*F*] in addition to Mr. C. J. Epril [*F*] and Mr. R. M. Betham [*A*]. (ii) *Committees TIB/–, TIB/3, TIB/5, TIB/6, TIB/6/3, TIB/6/5, TIB/6/6, TIB/7, TIB/9, TIB/10, TIB/12, TIB/13, TIB/14 (Timber Group):* Mr. G. Newell [*A*] in place of the late Mr. A. H. Barnes [*F*]. (iii) *Committee FHB/–: Farm and Horticultural Buildings:* Mr. A. H. Neave [*A*] in place of Mr. M. Pearlman [*A*].

Architects' Benevolent Society Centenary Appeal: The Council approved a donation of £250 to the Architects' Benevolent Society Centenary Appeal. This is additional to the Institute's annual grant.

Borough of Southampton: Transfer of Responsibility for Housing from Borough Architect to Borough Engineer: The Council considered a report concerning the transfer of responsibility for housing from the Borough Architect to the Borough Engineer, and it was agreed to send a letter of protest to the Borough Council at what was considered a retrograde step, detrimental to the best interests of architecture in the Borough.

Scale of Fees for State-Aided Housing Schemes: The Council approved a joint recommendation of the Executive Committee and the Practice Committee that negotiations should be opened with the Ministry of Health with a view to withdrawing the present scale of fees for state-aided housing schemes and substituting a new scale calculated on a percentage basis applicable to all forms of housing financed by public monies.

Treasury Committee on the Status, Organization and Remuneration of Professional Classes in the Civil Service: The Council approved a memorandum of evidence prepared by a subcommittee of the Salaried and Official Architects' Committee for submission to the Treasury Committee, which is sitting under the chairmanship of Sir Thomas Gardiner, G.B.E., K.C.B., to consider and advise on the future organization, structure and remuneration of the professional classes of the civil service.

Completion of Premises Fund: The Council heard with appreciation of the receipt of donations from Mr. P. V. Burnett [*F*], Mr. John G. Brown [*A*], Canada, and a member in South Africa who wishes to remain anonymous.

Membership: The following members were elected: as Fellows, 2; as Associates, 11.

Students: 161 Probationers were elected as Students, R.I.B.A.

Applications for Election: Applications for election were approved as follows: *Election 9 January* 1951: as Fellows, 9; as Associates, 106; as Licentiates, 8. *Election 3 April* 1951 (*Overseas Candidates*): as Fellows, 7; as Associates, 11.

Application for Reinstatement: The following application was approved: *As Licentiate:* Frederick Charles Robson [*Retd. L*].

Resignations: The following resignations were accepted with regret: George Valentine Myer [*F*], Miss Mary Dorothea Hancock [*A*], John Horner Hargreaves [*A*].

Applications for Transfer to Retired Members' Class under Bye-law 15: The following applications were approved: as Retired Fellows: Geoffrey Wyville Home, Sydney Charles Jury.

Obituaries

Charles Henry Isaacs [*Ret. L*], who died on 25 June, before his retirement, practised in Hammersmith. He was articled to Mr. Charles H. Flack [*A*] and later to Mr. John Groom. In 1900 Mr. Isaacs established his own practice, and was later the architect of houses, flats, commercial buildings and the many buildings associated with the development of building estates in Hammersmith, West Kensington, Fulham and Chiswick when those areas were becoming more populous in the early part of this century. His largest blocks of residential flats were Bridge Avenue Mansions, Ravenscourt Park Mansions (in close proximity to the Park), St. Paul's Mansions, Talgarth Mansions (close to Baron's Court Underground Station), Waldemar Avenue Mansions, Dorset and St. Clement's Mansions (Fulham), Oakhill Court, Putney, and Rusthall Mansions, South Parade, Bedford Park.

Practising in Weybridge, too, Mr. Isaacs designed large detached residences on the Haw Estate and at Esher Lodge Estate, Esher—this in the days when they stood in half an acre and cost £2,000 each residence. He also erected houses at Isleworth and at Hampton-on-Thames. Mr. Isaacs was 75.

William Norman Worrall [*A*] died on 25 June last. He was born in 1899.

Mr. Worrall was trained at the Regent Street Polytechnic, and on qualifying he became chief assistant to Mr. E. B. Musman [*F*] in 1929, entering into partnership in 1936. Whilst he was with Mr. Musman, designs for the following licensed houses were carried out: Comet (Hatfield), Mullet Arms (Perivale), Berkeley Arms (Bath Road), and the Nag's Head (Bishop's Stortford). The partnership was dissolved on the outbreak of war. In 1948 he joined the staff of Trehearne and Norman, Preston and Partners as a senior assistant.

Mr. Worrall set up the perspective drawings of several buildings which were exhibited in the Royal Academy.

Membership Lists

ELECTION: 14 NOVEMBER 1950

The following candidates for membership were elected on 14 November 1950:

AS FELLOWS (2)

Chan: Weng-Kuan, B.Sc., B.Arch. (L'pool) [*A* 1936], Ipoh, Malaya.

and the following Licentiate, who is qualified under Section IV, Clause 4 (*c*) (ii), of the Supplemental Charter of 1925:

Salonika: Ivor Herne, Salisbury, S. Rhodesia.

AS ASSOCIATES (11)

Bisset: Philip Yeats, Brisbane, Australia.
Cameron: John Alexander, Durban, S. Africa.
Chapman: Mary Elspeth (Miss), B.Arch. (Rand), Johannesburg, S. Africa.
Crofts: Edward Wentworth Nicholson, Brisbane, Australia.
Dekker: Dirk, Cape Town, S. Africa.
Finch: Barry Clifford, Sydney, Australia.
Glengarry: Montague Rupert Maney, Gisborne, New Zealand.
Hunt: Geoffrey James Jupe, Hunters Hill, N.S.W., Australia.
Jones: Ernest Henry, Hobart, Tasmania.
Murray: Allan Robert, B.Arch. (Melbourne), Melbourne, Australia.
Sheppard: Fergus George Frederick, Wellington, New Zealand.

ELECTION: 12 DECEMBER 1950

The following candidates for membership were elected on 12 December 1950:

AS FELLOWS (12)

Gilling: Malcolm Glynn, Dipl.Arch. (L'pool) [*A* 1943], Liverpool.
Hutton: Charles William [*A* 1944].
Jones: Harold, M.C. [*A* 1921], Weston-super-Mare.
Potter: Robert James [*A* 1934], Salisbury.
Randle: Frederic Lionel [*A* 1928], Smethwick.
Webber: Ernest Berry [*A* 1923].
and the following Licentiates who have passed the qualifying Examination:
Berger: Joseph.
Holman: John.
Kryton: John.
McAnally: Alexander, Glasgow.
Rosenberg: Eugene.
Waller: Charles Ashton, F.R.I.C.S., Aylesbury.

AS ASSOCIATES (519)

Adam: Douglas Gordon McKellar, D.A. (Glas.), Glasgow.
Aldred: Edward, Preston.
Aldridge: Stanley Ernest.
Alexander: David Johnston, Aberdeen.
Allen: Douglas Noel, Scarborough.
Allerton: John Robert, Bristol.
Allsopp: Cecil Joseph, Fleckney.
Ambrose: John Stuart.
Amis: Stanley Frederick.
Anderson: Robert William, B.Arch. (Dunelm), Newcastle-upon-Tyne.
Angus: John Martin.
Appleby: Will, Bilston.
Appleton: William John, Bromley.
Armstrong: Ann Penelope (Miss), Yeovil.
Askwith: Michael Ernest.
Astorga: Thomas David Williams, Timperley.
Auton: Leonard, West Hartlepool.
Aylward: James Ernest, Dip.Arch. (Birm.), Kidderminster.
Badham: Douglas John.
Bailey: James Cecil Lees Bedington, B.Arch. (L'pool).
Baker: Harry Ronald, Dip.Arch. (Birm.), Smethwick.
Ballantyne: James Ian, D.A. (Glas.), Castle Douglas.
Ballard: Gordon Weetman, Bourton-on-the-Water, Glos.
Ballard: Michael George, Oxford.
Bamford: George Stephen, Manchester.
Bargman: John McKenzie, Epping.
Barker: Dennis Albert, Dip.Arch. (Birm.), Birmingham.
Beardsworth: Neville Fogg, B.A. (Arch.) (Manchester), Bolton.

Beaton: Thomas Dick, Edinburgh.
Beckett: Bruce Probart, B.Arch. (C.T.).
Beddall: Thomas William, Dudley.
Bell: James Alan Morrison, B.Arch. (L'pool), Preston.
Bennett: Keith.
Billington: Edgar John, Oxford.
Birch: Albert Carter, Angmering-on-Sea.
Birkett: George, Dip.Arch. (Manchester), Blackpool.
Boddington: Wallace Pauley, Gillingham.
Bourne: Edmund Michael, Reigate.
Bowler: David Brian, Sherwood.
Bowles: Geoffrey Edward, Eastbourne.
Bowman: Barry Kenneth, Dipl.Arch. (Leeds), Leeds.
Boys: Peter Alan, Dipl.Arch. (Leeds), Pudsey.
Bracewell: Arthur Geoffrey, D.A. (Glas.), Tillicoultry.
Breckman: Rhona Lynette (Miss), Dip.Arch. (Manchester), Bridlington.
Briars: John Trevor.
Brodie: Barbara Neilson (Miss), D.A. (Glas.), Glasgow.
Brown: David John, B.Arch. (L'pool), Doncaster.
Brown: Melville Crum, Paisley.
Brown: Reginald John, Westbury.
Bryson: Gerald Joseph, Dip.Arch. (Birm.), Birmingham.
Buchanan: David Barnet, D.A. (Edin.), Kirkcaldy.
Buist: Robert Pace, D.A. (Edin.), Tranent, East Lothian.
Bull: Stanley John, Kilmarnock.
Burch: Charles Edwin.
Burgess: Robert George William, M.C., Mitcham.
Burrow: John Martin, Dip.Arch. (Birm.), Doncaster.
Bussey: Leonard James, Dip.Arch. (Sheffield), Sheffield.
Butcher: Edward Michael Coventry, Welwyn Garden City.
Butcher: Frances Vera (Miss), Dip.Arch. (The Polytechnic).
Butcher: Geoffrey Owen, Ilford.
Butler: Josephine Rees (Miss).
Butt: Ian Gordon, Cambridge.
Cadman: Kenneth James, Manchester.
Caldwell: Enid Mary (Miss), B.Arch. (L'pool), Warrington.
Campbell: Ian James.
Cansdale: Peter Reginald, Brighouse.
Capes: Basil Leslie.
Carter: John Christopher, Edinburgh.
Carter: Ralph John Frederick, B.Arch. (Dunelm), Darlington.
Cassidy: Gerald William Crookall, B.Arch. (L'pool), Preston.
Causer: Harry, Dip.Arch. (Sheffield), Chesterfield.
Challen: William Geoffrey.
Chamberlain: George, Shrewsbury.
Chapman: Ruth Eileen (Miss), B.Arch. (L'pool), Halifax.
Cheetham: Jack, Dipl.Arch. (L'pool), Manchester.
Chipperfield: John Edward, Ampthill.
Chopin: Francois Claremont St. Jean, Edinburgh.
Clark: Robert George Roland.
Coakes: Peter Arthur, Sutton Coldfield.
Cobb: Brian Geoffrey, Dip.Arch. (Manchester), Wilmslow.
Cobb: Derek Anthony, Dip.Arch. (Manchester), Wilmslow.
Cole: Eric George.
Colley: Eric Dalston, Dip.Arch. (Manchester), Bolton.
Collinson: Peter Arthur, Sidcup.
Costain: Jane (Miss), Dorking.
Crabtree: James Arthur.
Craig: Joseph Andrew Livingstone, Bramhall.
Crease: John Thomas, Luton.
Crick: Arthur Leslie Richard, Reading.
Crocker: William Henry, B.A. (Arch.) (Sheffield), Leeds.
Cromwell: Peter Frank, Weston-super-Mare.
Croydon: Frederick William Thomas, Newton Abbot.
Cumming: Geoffrey Standbrook, Preston.
Dalrymple: James Gresty, Manchester.
Dalton: Bernard Ralph Sparks, Grays, Essex.
Davidson: Angus Garth, Leamington Spa.
Davie: William Tait, D.A. (Glas.), Millport, Isle of Cumbrae, Buteshire.
Davies: Derrick William, Dip.Arch. (Cardiff), Rhondda.
Davies: Gwilym Parry, B.Arch. (L'pool), Colwyn Bay.
Davis: Derek Edward, Dip.Arch. (Birm.), Birmingham.
Davison: Brenda Trevor (Mrs.).
Dawbarn: Patricia (Miss), Weybridge.
Dawson, Donald Sydney, Portsmouth.
Day: Leslie John, Swindon.
Dean: Charles Geoffrey, Dipl.Arch. (Leeds), Wakefield.
Deed: Alan James, D.A. (Glas.), Glasgow.
de Graaf: Brian, Birmingham.
de Lara: Louis George Charles, D.F.M. [*L*], Poole.
de Margry: Mona Doreen (Miss), Dip.Arch. (Birm.), Wolverhampton.
Dempster: William.
Dewhurst: Harry, Dipl.Arch. (L'pool), Beer, S. Devon.
Dishman: George William Donald, B.Arch. (L'pool), Wirral.
Dix: Gerald Bennett, B.A. (Arch.) (Manchester), Altrincham.
Dixon: Jack, Dipl.Arch. (Leeds), Leeds.
Dolezal: Frantisek, East Tilbury.
Doran: Brian Patrick, Welwyn Garden City.
Drummond, John, D.A. (Glas.), Glasgow.
Duncan: George Park, D.A. (Edin.), Dip. T.P. (Edin.), Edinburgh.
Durling: Pauline Mary Tollemache (Miss).
Dyer: Charles Anthony Gilbert, Dip.Arch. (Sheffield), Tiverton.
Dyer: Ronald James, Margate.
Dyer: Roy Alexander, Manchester.
Edgecombe: John Frederick, Rickmansworth.
Edwards: John Morton, Chester.
Elgood: Margaret Mary (Miss), B.A. (Arch.) (Lond.), Scarborough.
Elliott: John Edward.
Elliott: Patrick Arthur, Amersham.
Ellis: George Raymond, Ness.
English: Anthony, High Barnet.
Fairburn: Sheila Alys (Miss), B.A. (Arch.) (Lond.), Gainford.
Fairley: Graham, Birmingham.
Falconer: John, D.A. (Edin.), Edinburgh.
Faulds: Walter Flett, Kilbarchan, Renfrewshire.
Favell: Kenneth Weston, Dipl.Arch. (L'pool), Liverpool.
Felton: Charles Henry.
Fenwick: Hubert Walter Wandesforde, Edinburgh.
Ferguson: Morris Hollywood, Holywood, Co. Down.
Ffoulkes: John Desmond, B.Arch. (L'pool), Birkenhead.
Field: Martin, Dipl.Arch. (U.C.L.), Gosport.
Fielden: Ivan Elian, B.Arch. (L'pool), Blackpool.
Fielding: Ronald Harold.
Finlay: Thomas, Bingley.
Firman: Kenneth George, Romford.
Firth: John Anthony, Dipl.Arch. (Leeds), Heckmondwike.
Fisher: Peter George, Dip.Arch. (Sheffield), Greenock.
Fleming: Robert Hood, Dip.Arch. (Abdn.), Inverness.
Fletcher: David Wyndham, Dip.Arch. (Cardiff), Whitchurch Cardiff.
Floyd: Michael Pulsford.
Foster: Donald, Newcastle-upon-Tyne.
Foster-Smith: Derek, Dip.Arch. (Sheffield), Doncaster.
Francis: Michael Reginald, Oxford.
Franklin: George Henry.
Fraser: Michael Graham, Formby.
Fraser: Robert William, Dip.Arch. (Abdn.), Inverness.
Frick: Paul Robin, Dipl.Arch. (U.C.L.).
Furney: Janet Patricia (Miss), Buckhurst Hill,
Fyfe: Ian Gray, D.A. (Edin.), Falkirk.
Garbutt: Anthony, B.A. (Arch.) (Manchester), Timperley.
Gear: Leslie Arthur.
Gibson: Sheila Constance (Miss), Monks Risborough.
Gill: John Joseph, Coventry.
Gleaves: Kenneth, Stoke-on-Trent.
Glen: Donald, Barking.
Godfrey: Gordon, Drayton St. Leonard.
Godwin: William John Gilbert, Coulsdon.
Goebel: Ronald Francis Holley, B.A. (Arch.) (Lond.).
Gold: Kenneth Gilbert, Surbiton.
Goodhew: Philip Arthur.
Gower: William, Dipl.Arch. (Leeds), Leeds.
Green: Edward Knolles, B.Arch. (C.T.).
Greenwood: Eileen Mary (Miss), B.Arch. (L'pool), Todmorden.
Grey: George Edward, Derby.
Grinshpon: Avshalom.
Guest: Richard Asa, Birmingham.
Guy: Frank James, Southampton.
Hague: Douglas Bland, Bow Street, Cardiganshire.
Hall: David Malcolm, Edinburgh.
Hall: Margaret Patricia Frances (Mrs.), Edinburgh.
Halliwell: John Philip, B.Arch. (L'pool), Hitchin.
Hambly: Maya Gwendoline Camilla (Miss).
Hamilton: Gerald, Dipl.Arch. (Leeds), Leeds.
Hammond: John William.
Hanchet: Sidney James.
Hancock: Arnold Derrick, B.Arch. (L'pool), Market Rasen, Lincs.
Hanna: John, B.Arch. (L'pool), Burnley.
Harding: Peter, Dipl.Arch. (Leeds), Leeds.
Harding: Una Caroline (Miss).
Hardy: Douglas William, Dip.Arch. (Birm.), Birmingham.
Hare: Richard Williams, B.A. (Arch.) (Lond.).
Harrison: Roy Craig, B.Arch. (C.T.).
Harrison: Roy Edward Greenwood, Bexhill-on-Sea.
Hawkins: Patricia Joy (Miss), Upper Warlingham.
Hayden: Brian Patrick, B.Arch. (Dublin), Blackrock, Co. Dublin.
Heaton: Alan Hartley, Dip.Arch. (Manchester), Manchester.
Hemmings: Geoffrey Haworth, B.Arch. (L'pool), Stoke-on-Trent.
Hemsoll: Eric Marland, Birmingham.
Hewitt: Brian Montgomery, Portadown.
Hewitt: Eric, Dip.Arch. (Sheffield), Sheffield.
Hickman: Denis Roy, Bromley.
Higgins: Harold Cassius.
Higgins: John Arthur Cecil, Hemel Hempstead.
Hill: Arthur Edward, Dip.Arch. (Birm.), Birmingham.
Hill: Betty Eleanor Joan (Miss), B.Arch. (L'pool), Bletchley.
Hilton: James Wilding, Dip.Arch. (Dunelm), Newcastle-upon-Tyne.
Hitchcock: Alan Douglas, Dipl.Arch. (U.C.L.), Harrogate.
Hodges: Arthur Edmund John, Bristol.
Hodges: Michael Sydney, Dipl.Arch. (U.C.L.).
Holman: Norman Robert, B.Arch. (L'pool), Liverpool.

Hood: Thomas Kendrick, Birmingham.
Hope: James Alexander Kerr, Bristol.
Hooper: Eric William, Dip.Arch. (Sheffield), Sheffield.
Hopper: Frederick William (Junior), Dip.Arch. (Dunelm), Sunderland.
Hopwood: Margaret Gillian (Miss).
Horlock: Leonard Eric, Bromley.
Horsfall: Colin Jonas, B.Arch. (L'pool), Huddersfield.
Houghton-Evans: William, Nottingham.
Howard: John Wilding, Dipl.Arch. (L'pool), Wallasey.
Howard: Stanley John, Croydon.
Howell: Owen John.
Hubert: David William.
Hughes: Kenneth Sunderland, St. Leonards-on-Sea.
Humby: Harold John, Bognor.
Humpston: Arthur George, B.Arch. (L'pool), Colwyn Bay.
Hunter: John Roy, Dipl.Arch. (Leeds), York.
Hutcheson: Lilian McCarthy (Mrs.), Horsham.
Hutchinson: Geoffrey Proom, Sunderland.
Hutchison: Neil, New Barnet.
Inglis: Joyce Blair (Miss), Bearsden.
Ireland: Raymond Prescott, B.A. (Arch.) (Sheffield), Rotherham.
Irving: Anthony Robert, Dip.Arch. (Dunelm), Newcastle-upon-Tyne.
Jackson: John Brian, B.Arch. (L'pool), Penrith.
James: Donald Albert, Dip.Arch. (The Polytechnic), Stratford-on-Avon.
James: Illtyd Lessels, Ammanford.
James: Michael, Chilcompton.
James: William Alexander, Dip.Arch. (Abdn.), Coventry.
Jellinek: Eleanor Brigitte (Miss).
Jelly: Leslie John.
John: Graham Daniel, Dip.Arch. (Cardiff), Neath.
Johnson: Arthur, Dip.Arch. (Sheffield), Hull.
Johnston: Arthur Robert Court, B.Arch. (L'pool), Carlisle.
Jones: Brian Cambrian, Dipl.Arch. (L'pool), Liverpool.
Jones: David Hodgson, Liverpool.
Jones: George, Dipl.Arch. (L'pool), Liverpool.
Jones: Gordon Frederick, Birmingham.
Jones: Martin Rosslyn, B.Arch. (L'pool), Liverpool.
Jones: Peter Eldon, New Malden.
Jourdan: Edith Therese (Miss), Manchester.
Jowett: Julie Ferguson (Miss), Bradford.
Katten: Hans Godfrey.
Keating: Philip Francis, Brighton.
Kelly: George Denys, Salford.
Kemp: John, South Croydon.
Kendall: Victor John, Birmingham.
Kennett: John, Ewell.
Kett: Brian David, Ilford.
Killick: John Alexander Wentzel.
Kimm: James, Renfrew.
King: Anthony Bernard, Croydon.
Kinghorn: Gordon James, B.Sc. (Arch.) (Glas.), Dumfries.
Kirkham: John Bernard, B.Arch. (Dunelm), Scarborough.
Knight: Geoffrey Charles, Dip.Arch. (Birm.), Rugby.
Knight: Henry Ronald Ewart [*L*], High Wycombe.
Knight: Peter Harry, Sutton.
Krall: Hugh Duncan, Cambridge.
Last: Ramon Peter, Ilford.
Lawson: Arthur William, Colchester.
Lee: Peter James, B.A. (Arch.) (Sheffield), Sheffield.
Lees: Samuel Douglas, B.Arch. (L'pool), Fleetwood.
Lightfoot: Roy William, Beckenham.
Lindsay: Kenneth Thompson, M.A., D.A. (Edin.), Liverpool.
Linton: Ronald George Clifton, Methil.
Littler: John Edward Tudor, Dip.Arch. (Sheffield), Chester.
Lomas: James Harvey, Walton-on-Thames.
Lonie: Gordon Alexander, Portobello.
Lucey: Philip William, B.Arch. (L'pool), Lymington.
Lyde: Jeffrey William Ward.
Macaulay: John Stuart, B.Arch. (L'pool), Liverpool.
MacGregor, Donald Ronald, Lower Largo, Fife.
MacKenzie: Ian Alexander, Dip.Arch. (Abdn.), Dingwall.
McKerchar: Donald Stewart, D.A. (Edin.), Inverness.
Mackintosh: James Ian, Cawdor, Nairn.
McLachlan: John, Glasgow.
McLardy: Roy Elliott, Manchester.
MacMillan: Angus Bowie, D.A. (Glas.), Glasgow.
MacWatters: Margaret Anne Courtenay (Miss), B.Arch. (L'pool), Bristol.
Madin: William John Hardcastle Dalton, Birmingham.
Maidment: Peter Charles, Edinburgh.
Malins: Edgar Thomas, Birmingham.
Marshall: James Ian Haig, Edinburgh.
Marshall: Julia de Board (Miss), Bristol.
Marshall: Roger Christopher, Dipl.Arch. (Leeds), Shipley.
Martin: Reginald Gordon, Eastbourne.
Mason: Robert John, Belfast.
Matthews: Gerald Royston, Cardiff.
Maybury: Michael, West Bromwich.
Meehan: George, D.A. (Glas.), Bannockburn.
Mellor: Kenneth Wilson, Wetherby.
Merrett: Patricia Helen (Miss), B.A. (Arch.) (Lond.), Ockley.
Middlebrook: John Romilly Noel.
Mills: Denis Leslie, Romford.
Milne: John, Aberdeen.
Milton: Ronald, Welwyn Garden City.
Mitchell: Malcolm Lionel, Dundee.
Mobbs: Ronald Henry, Saffron Walden.
Moore: John James, B.Arch. (L'pool), Liverpool.
Morel: Herbert Stanley, Croydon.
Morgan: Michael Harry, Dipl.Arch. (L'pool), Liverpool.
Morgan: William, Kirkcaldy.
Morland: Stephanie (Miss).
Morris: Robert Thomson, D.A. (Dundee), Leslie, Fife.
Morrison: Donald Rhind, Dip.Arch. (Dunelm), Newcastle-upon-Tyne.
Morrison: James, D.A. (Glas.), Paisley.
Mowat: Ian George, Glasgow.
Mullender: Philip Edward.
Munnich: Krzysztof Maria, D.A. (Glas.), A.M.T.P.I., S.P. Dip.
Murcutt: Frederick George Halls, M.C., Hove.
Muriel: Wyndham Lancelot.
Murray: Michael Graeme, M.A. (Cantab.), Edinburgh.
Murtagh: James Michael, Dip.Arch. (Birm.), Birmingham.
Nairne: Alexander David Marshall, D.A. (Glas.), Bridge of Allan.
Neale: Edgar Walter, Birmingham.
Neil: John, D.A. (Glas.), Glasgow.
Nettleton: Gordon Rodger, Dipl.Arch. (Leeds).
Nicholls: William, Dipl.Arch. (Leeds), Leeds.
Nicol: John, Dip.Arch. (Abdn.), Milltimber.
Noble: Charles Wycliffe, Kingston-upon-Thames.
Nottingham: Pauline Ann (Miss), B.Arch. (L'pool), York.
Nuttall: Rene Marguerite (Miss), Dipl.Arch. (U.C.L.), Dorking.
Oliver: Charles John.
Oliver: Leslie, Dip.Arch. (Sheffield), Sheffield.
O'Neilly: John Gilbert.
O'Toole: Terence, Banstead.
Owen: Halsall, Dipl.Arch. (L'pool), Warrington.
Oxley: Richard Ernest, Newcastle-upon-Tyne.
Parfitt: Alfred John.
Parkinson: Alexander Ashley, B.Arch. (L'pool), Manchester.
Parkinson: Peter Shaw, Sale.
Parry: Robert Leonard, D.A. (Glas.), Ruthenglen.
Parsons: Frank Beresford, Birmingham.
Parsons: Ian Mesnard, Dipl.Arch. (U.C.L.).
Paterson: Kenneth Walter, B.Arch. (L'pool), Birkenhead.
Paton: James Macfarlane, Glasgow.
Paul: Jacques.
Paxton: John Dunlop, Leeds.
Peden: Rodney Wallace, Dipl.Arch. (L'pool), Liverpool.
Peover: Donald Edwin, Dipl.Arch. (L'pool), Liverpool.
Petersen: Leif Norman, Langley.
Peto: Michael James, B.A. (Arch.) (Lond.), Canterbury.
Pevsner: Uta (Miss).
Phillips: Geoffrey Kingsley, Bath.
Pickard: Robert James, M.B.E., Dipl.Arch. (Leeds), Leeds.
Pickering: Robert Edward Algar, Aberdeen.
Pinkney: William Percival, West Hartlepool.
Pirrie: Anne Margaret (Miss), B.A. (Arch.) (Lond.), Farnham.
Platt: Jack, B.Arch. (L'pool), Silverdale, Staffs.
Pollit: Kimball, Halifax.
Preece: Henry Philip, Dip.Arch. (Manchester), Southport.
Price: Leslie Roland Charles, Hereford.
Probert: Beryl (Miss), Gravesend.
Prodgers: Charles Henry, Northfleet.
Prosser: John Henry, Birmingham.
Prus-Wisniewski: Wiktor Mariusz.
Pullar: William Fraser, D.A. (Dundee), Perth.
Purdom: Kenneth Ashmore Ramsden, D.A. (Dundee), St. Andrews.
Raleigh: Michael Adrian, B.Arch. (L'pool), Leeds.
Ratcliffe: Alan Francis, Blackburn.
Ratcliffe: Colin Bernard, Altrincham.
Read: Christopher Burgess, Dipl.Arch. (U.C.L.), Kingston, Surrey.
Renninson: Peter Thomas, Preston.
Rhys: Gwilym, Dipl.Arch. (L'pool), Birkenhead.
Rich: Stanley George, Crawley.
Richards: Brian, B.Arch. (L'pool), Wellington.
Richards: Gerald Victor.
Ridgway: Hubert Charles James, Nottingham.
Roach: Alan Price, Romford.
Roach-Bowler: Colin, Petts Wood.
Roberts: David Stuart, Bromley.
Roberts: Glyn Edward, B.Arch. (L'pool), Liverpool.
Roberts: Merfyn Hughes, B.Arch. (L'pool), Penmaenmawr.
Robertson: James, Kincardine on Forth.
Robinson: Keith Douglas Hurley, Birmingham.
Robson: Denis, Dip.Arch. (Sheffield), Rotherham.
Rockel: Robin.
Rodgers: Sidney Clive, Dip.Arch. (Cardiff), Treorchy, Glam.
Rogers: John Michael.
Rogers: Leonard Guy.
Rogerson: Fred, B.Arch. (L'pool), Bray, Co. Wicklow.
Rossant: Godfrey Lorenzo Clark, Dip.Arch. (Manchester), Preston.
Roy: David Brian, Leeds.
Royle: Brenda Phyllis (Miss), Chester.
Rudd: Keith, B.Arch. (Dunelm), Stevenage.
Rush: Brian Anthony, Birmingham.
Rushfirth: David, Dip.Arch. (Manchester), Lytham St. Annes.
Rutherford: Thomas, D.A. (Edin.), Kelty.

Ryder: Anne Isabel (Miss).
Samuels: Frederick Sortain.
Saner: Josephine Ann (Miss), B.Arch. (L'pool), Birkenhead.
Saunders: Cyril Alfred, Chesham.
Scholefield: Reginald Charles, B.A. (Arch.) (Sheffield), Wakefield.
Scholfield: Peter Hugh, B.Arch. (L'pool), Liverpool.
Scott: James Malcolm Irwin, Kettering.
Scott: Thomas Russell, D.A. (Glas.), Glasgow.
Seaton: Douglas William, D.A. (Edin.), Edinburgh.
Sharp: Alan Graham.
Shaw: Frank, Dipl.Arch. (Leeds), Cleckheaton.
Shaw: Robert Adam, D.A. (Glas.), Glasgow.
Sheard: Gerald Frank, B.A. (Sheffield), Rotherham.
Shearer: James Daniel, D.A. (Edin.), Edinburgh.
Shearer: Mary Morag (Mrs.), Edinburgh.
Shepherd: William Douglas, Derby.
Shickle: Alec John, Reading.
Simmons: Sidney, Sutton.
Simpson: Roger Ian, Surbiton.
Sinclair: Marla Stewart Fraser (Miss), Paisley.
Singer: Joseph Bronislaw, D.A. (Glas.).
Smith: David Banister Lockhart, Ardingly.
Smith: Donald James, Morden.
Smith: Douglas Diver.
Smith: Douglas Victor, Dip.Arch. (Birm.), Redditch.
Smith: Ian Hutton, Oxford.
Smith: Peter Charles.
Smith: Reginald Hugh Stuart, B.A. (Arch.) (Sheffield), Stoke-on-Trent.
Smith: Stanley, Dip.Arch. (Dunelm), Sunderland.
Smith: Stephen Geoffrey, B.A. (Arch.) (Sheffield), Sheffield.
Sorsky: Rina Haviva (Miss), B.Arch. (L'pool), Liverpool.
Sparks: Robert Alfred, Sittingbourne.
Spate: Donald John, Kingswinford.
Speight: John Hill, Sutton Coldfield.
Spence: James McKay, D.A. (Edin.).
Spence: Thomas Dinning, Newcastle-upon-Tyne.
Sproson: Frank, St. Andrews.
Stanley: Josephine Clare (Miss).
Steedman: George Sinclair Gibson, D.A. (Edin.), Edinburgh.
Steele: Margaret Elma (Miss), Newcastle-upon-Tyne.
Steele: Thomas, Haddington.
Stevens: James Charles.
Stevenson: John Hugh Robert, Liphook.
Stevenson: Robert, Dipl.Arch. (Leeds), Leeds.
Stickings: Joyce Doreen (Miss).
Stirling: James Frazer, Dipl.Arch. (L'pool), Liverpool.
Stockley: Donald, Dip.Arch. (Sheffield), Keighley.
Stockley: Rosemary Hazel Jane (Miss).
Stonard: Horace Sidney, Hayes, Kent.
Storer: Herbert George, Dip.Arch. (Abdn.), Gloucester.
Stott: Patricia (Miss), Dip.Arch. (Manchester), Rochdale.
Stowe: Nancy Edwina (Miss), Leamington Spa.
Stringer: Richard Arthur Lionel, B.Arch. (L'pool), Dublin.
Stuart: Eric James, Dipl.Arch. (Leeds), Ilkley.
Stutchbury: Howard Edward, B.A. (Arch.) (Manchester), Upminster.
Stutchbury: William Wycliffe, B.A. (Cantab.), Eastbourne.
Sutton: Arthur Geoffrey, Manchester.
Sykes: Ronald William, M.A. (Cantab.), Dip.Arch. (Sheffield), Hessle, E. Yorks.
Tanner: John Wilkes, B.Arch. ,(L'pool), Liverpool.
Tate: John Whysall, Mansfield.
Tayler: Julian Thomas, Dip.Arch. (Birm.), Coventry.
Taylor: John, Goodmayes.
Telfer: Violet Ileene Went (Miss), Cockfosters.
Thomas: Anthony Edward, Preston.
Thomas: Bryan Keith.
Thomas: Frederick Evan, B.Arch. (L'pool).
Thomson: William, Barrow-in-Furness.
Thomson: William Chalmers, D.A. (Glas.), Glasgow.
Thorpe: Douglas Bernard, Newport, Mon.
Thornton: John Kenneth, B.Arch. (L'pool), Blackpool.
Thornton: Richard Eric, Dip.Arch. (Birm.), Birmingham.
Thurlow: Ernest Herbert, Cambridge.
Timmings: Reginald, Exeter.
Tindall: Bryce Ward, Leicester.
Todd: Anthony Clive, Dipl.Arch. (U.C.L.), Upminster.
Tolson: Nigel Wilson Senior, B.A. (Arch.) (Lond.).
Tompkinson: Charles William, Dip.Arch. (Birm.), Stoke-on-Trent.
Torrance: John Stevenson, Dip.Arch. (Abdn.), Elgin.
Treglown: Gerald Percival.
Tunstall: Eric Trevor, Nottingham.
Turnbull: James Haydon, Bromley, Kent.
Turner: Raymond George, Sutton Coldfield.
Tyldesley: Alan John, Dip.Arch. (Manchester), Manchester.
Van de Waal: Jan Pieter, B.Arch. (L'pool), Liverpool.
Van Winsum: Henderik Jacobus.
Walker: Guy Louis Varley, Birmingham.
Walker: Robert John, D.A. (Edin.), Stirling.
Walters: David, B.Arch. (L'pool), Aylesbury.
Wanstall: Herbert Charles, Tolworth.
Ward: Frederick Herbert.
Warner: Allan Boyd, East Barnet.
Waterkeyn: Michael John, Dipl.Arch. (L'pool), Liverpool.
Watson: Roger Simpson, B.Arch. (L'pool), Southport.
Watts: Dennis, Chelmsford.
Wells: Pamela Ann (Mrs.).
West: Ronald Edward, Truro.
White: Kenneth Newman, Towcester.
White: Leslie Sunley, D.F.C., Dip.Arch. (Sheffield), Sheffield.
White: Philip Malcolm, Dip.Arch. (Sheffield).
White: William, Preston.
Whitehead: Donald Charles, Dipl.Arch. (L'pool) Liverpool.
Whitehouse: Graham Gameson, Dip.Arch. (Birm.), Birmingham.
Whitmore: John Lawrence.
Whitson: Evelyn Heather (Miss), D.A. (Edin.), Menstrie.
Whittlestone: Maurice Geoffrey, Dipl.Arch. (Leeds), Wakefield.
Wilkinson: Martin Clennel, Dipl.Arch. (U.C.L.).
Williams: Ronald Francis.
Wilson: Alan, Dipl.Arch. (Leeds), Lancaster.
Wilson: Alexander Dowell, D.A. (Glas.), Dunblane.
Wilson: James Wood, Dip.Arch. (Manchester), Oldham.
Wilson: John, Dip.Arch. (Abdn.), Nairn.
Wilson: Thomas Edward, Dipl.Arch. (L'pool), Blackpool.
Wood: Douglas Reay, T.D., Newcastle-on-Tyne.
Wood: John Mitchell, D.A. (Edin.), Crossgates, Fife.
Woolley: Leslie, Dipl.Arch. (Leeds), Pontefract.
Wortley: David John, Dip.Arch. (Sheffield), Bakewell.
Wren: Eric Henry Christopher, Wolverhampton.
Wright: Christopher Robin, Fareham.
Wriglesworth: Kenneth William, Dipl.Arch. (U.C.L.).
Wyatt: Selwyn Vingoe, Plymstock.
Wylie: Donald Wilfred.
Yates: Alfred John, Tolworth.
Young: Gordon, Macclesfield.
Young: Raymond Alan, Dipl.Arch. (U.C.L.), Winchester.
Yuen: Esther Mo-Yow (Miss).

ELECTION: 9 JANUARY 1951

An election of candidates for membership will take place on 9 January 1951. The names and addresses of the candidates with the names of their proposers, found by the Council to be eligible and qualified in accordance with the Charter and Bye-laws, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary, R.I.B.A., not later than Monday 1 January 1951.

The names following the applicant's address are those of his proposers.

AS FELLOWS (9)

Fielder: George Harold [*A* 1922], Leadenhall Buildings, E.C.3; Meadowsweet, East Lane, East Horsley, Surrey. W. J. Walford, Dr. Charles Holden, J. M. Easton.

Nelson: Clement Osmond [*A* 1897], Hillgarth, 80 Brackendale Road, Bournemouth. Applying for nomination by the Council under Bye-law 3 (*d*).

Plumley: Donald John Grant [*A* 1921], 23 London Road, Tonbridge, Kent. Briant Poulter, O. F. Savege, H. C. Mason.

Spencer: Alfred Lloyd [*A* 1937], Ministry of Works, Abell House, S.W.1; 54 Bruce Avenue, Shepperton, Middlesex. C. G. Mant, Sir Charles Mole, W. A. Rutter.

Stewart: Cecil, D.A. (Edin.), A.M.T.P.I. [*A* 1936], Dept. of Architecture, Manchester Municipal School of Art; 9 Berkeley Mansions, Fielden Park, Manchester, 20. Frederick Gibberd, G. Jellicoe, Sir Hubert Worthington.

and the following Licentiates who are qualified under Section IV, Clause 4 (*c*) (ii) of the Supplemental Charter of 1925:

Coward: Alan Damien, Friary Brewery, Guildford; Marlyns Cottage, Burpham, Guildford. R. F. Bargman, G. G. Wornum, David Stokes.

Goldsbrough: Francis, 18 Bennetts Hill, Birmingham, 2; 38 Bloomfield Road, Moseley, Birmingham, 13. J. B. Surman, H. G. Wicks, S. N. Cooke.

Hammick: Hubert James, 'Alfriston Villa,' Alma Road, Plymouth; 'Stanegarth,' Longfield Villas, Pomphlett, near Plymouth. Lt.-Col. F. J. Taylor, E. U. Channon, S. R. Edwards.

Jackman: Harry, 7 South Parade, Leeds, 1; Scarcroft Lodge, 19 Shaw Lane, Leeds, 6. N. R. Paxton, Victor Bain, G. H. Foggitt.

AS ASSOCIATES (106)

The name of a school, or schools after a candidate's name indicates the passing of a recognized course.

Aitken: Joseph Murray, D.A. (Edin.) (Edin. Coll. of Art: Sch. of Arch.), East Bank House, Hawick, Scotland. W. I. Thomson, H. Wilson, Niel Martin-Kaye.

Allmark: Kenneth Harold, B.A. (Arch) (Manchester) (Victoria Univ., Manchester: Sch. of Arch.), St. John's Vicarage, Bury, Lancs. Prof. R. A. Cordingley, F. L. Halliday, J. E. Kewell.

Allsop: Keith John (Leicester Coll. of Art and Tech.), 95 Coventry Road, Market Harborough. F. Chippindale, S. Penn Smith, G. A. Cope.

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Angus: Alexander Valentine [Final], 22 Langley Avenue, Worcester Park, Surrey. James Melvin, A. B. Knapp-Fisher, A. L. N. Russell.

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Ault: Anthony James (Arch. Assoc. (London): Sch. of Arch.), 66b Oxstalls Lane, Gloucester. R. F. Jordan, H. F. Trew, Henry Elder.

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Baker: Valerie Eileen (Miss) (Edinburgh Coll. of Art: Sch. of Arch.), The Hill House, Portsmouth Road, Esher, Surrey. W. I. Thomson, James Shearer, Guy Morgan.

Baldwin: David, Dipl.Arch. (Leeds) (Leeds Sch. of Arch.), 21 Brook Avenue, Timperley, Cheshire. W. A. Eden, L. C. Howitt, Edgar Sutcliffe.

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Christy: David Alan Thomas, Dip.Arch. (Leics) (Leicester Coll. of Art and Tech.: Sch. of Arch.), Hemington House, Hemington, Derby. F. Chippindale, H. G. C. Spencely, Alexander Thorpe.

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Cooper: Giles, Dip.Arch. (The Polytechnic) (The Poly., Regent Street, London: Sch. of Arch.), 'Downfield', Jordans, near Beaconsfield, Bucks. David Jenkin, H. C. Constantine, C. R. Crickmay.

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Dinsdale: John Bentham, Dipl.Arch. (Leeds) (Leeds Sch. of Arch.), Park View, Ilkley, Yorks. W. A. Eden, R. F. Dodd, T. L. Dale.

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Robinson: Frank, D.F.M. [Final], 8 Queensway, East Didsbury, Manchester, 19. L. C. Howitt, G. N. Hill, Edgar Sutcliffe.

Robinson: Graham (Welsh Sch. of Arch.: The Tech. Coll., Cardiff), 2 Gilbert Street, Cadoxton, Barry, Glamorgan. Lewis John, C. F. Jones, Harry Teather.

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Turnbull: Charles Frederick John, D.A. (Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 14 Twirlees Terrace, Hawick, Roxburghshire. W. I. Thomson, H. Wilson, Niel Martin-Kaye.

Turner: Robert Edward [Final], 129 Ridgeway, Chingford, E.4. A. B. Waters, A. L. Smith, David Booth.

Watson: Robert, D.A. (Edin.) (Edinburgh Coll. of Art: Sch. of Arch.), 4 Mary Place, Brucefield, Dunfermline, Scotland. Applying for nomination by the Council under Bye-law 3 (*d*).

Williams: Thurston Monier (Arch. Assoc. (London): Sch. of Arch.), 23 Well Walk, N.W.3. R. F. Jordan, Henry Elder, A. R. F. Anderson.

Wilson: Norman Ramsay, D.A. (Glas.) (Glasgow Sch. of Arch.), 6 Sunningdale Avenue, Newton Mearns, Glasgow. Prof. W. J. Smith, T. J. Beveridge, Col. G. G. McLean.

Winter: Douglas [Final], 'Henley Villa', Little Carter Lane, Mansfield, Notts. J. W. M. Dudding, F. W. Tempest, L. S. Stanley.

Winter-Lotimer: June Doris (Miss) (Arch. Assoc. (London): Sch. of Arch.), Thickwood, Elmstead Lane, Chislehurst, Kent. R. F. Jordan, Henry Elder, A. R. F. Anderson.

Wooley: Gerard Cawdron, Dip.Arch. (Sheffield) (Univ. of Sheffield: Dept. of Arch.), 9 The Circle, Moorends, Doncaster. Prof. Stephen Welsh, H. B. Leighton, H. B. S. Gibbs.

AS LICENTIATES (8)

Fennamore: John Edwin, Assessor, Central Land Board and War Damage Commission, 1 Nelson Gardens, Stoke, Plymouth; 9 Cross Park, Brixton, Plymouth. W. N. Couldrey, F. W. Foster-Turner, H. M. R. Drury.

Gidlowe: Stanley, c/o Borough Offices, Bury St. Edmunds; 4 Gloucester Road, Bury St. Edmunds. W. H. Mitchell, N. E. G. Weston, J. D. Hossack.

Hagger: Burt James Leslie, County Architect's Dept., Shire Hall, Bedford; 43 Wendover Drive, Bedford. Major B. C. Deacon, W. G. Walmsley, W. R. Steel.

Norman: Eric Marshall, c/o Messrs. Hardy's Kimberley Brewery Ltd., Notts; Cliff House, 65 Holly Road, Watnall, Notts. Eric Cole and the President and Hon. Sec. of the Wessex Society of Architects under Bye-law 3 (*a*).

Pine: Arthur Tattersall, c/o Messrs. Matthews and Son, 91 Gower Street, W.C.1; 109 Louisville Road, Upper Tooting, S.W.17. Colonel M. K. Matthews, Julian Leathart, Gordon Pringle.

Richardson: Lawrence Irvine, c/o Ministry of Works, Government Buildings, Lawnswood, Leeds; 140 Shadwell Lane, Moortown, Leeds. Allan Johnson, N. H. Fowler, W. H. King.

Vincent: Allan William, Borough Architect, Council Offices, Harwich, Essex; 33 Esplanade, Harwich. L. C. Howitt, Johnson Blackett, H. B. Rowe.

Whiteman: Alec, 4 Queen Victoria Road, Coventry; 82 Cannon Hill Road, Coventry. W. S. Hattrell, A. H. Gardiner, Rolf Hellberg.

ELECTION: 3 APRIL 1951

An election of candidates for membership will take place on 3 April 1951. The names and addresses of the overseas candidates, with the names of their proposers, are herewith published for the information of members. Notice of any objection or any other communication respecting them must be sent to the Secretary R.I.B.A. not later than Saturday 17 March 1951.

The names following the applicant's address are those of his proposers.

AS FELLOWS (7)]

Begg: Kenneth Andrew [*A* 1929], Dept. of Public Works, Entebbe, Uganda, E. Africa.

14 Gowers Road, Entebbe. Henry Kendall, G. B. E. Norburn, H. T. Dyer.

d'Avoine: Pierre Avicenna [*A* 1934], c/o Messrs. Gregson, Batley and King, Chartered Bank Building, Fort, Bombay, India; Gool House, Cirrus Avenue, Byculla, Bombay. Prof. Claude Batley, H. F. King, M. K. Jadhav.

Joglekar: Shridhar Krishna [*A* 1942], 117 L. Block, Central Public Works Dept., New Delhi, India; 182 Constitution House, Curzon Road, New Delhi. Walter George, R. L. Gehlote, G. B. Deolaliker.

Shewan: William Wyllie Clarke [*A* 1929] Architectural Office, Public Works Dept., Hongkong. J. B. Nicol, J. G. Marr, E. F. Davies.

Talpade: Jayavant Ramrao [*A* 1939], Assistant Govt. Architect, West Bengal, Writers Buildings, Calcutta, India; 184 Rash Behari Avenue, Calcutta. H. F. King, B. Matthews, N. B. Shroff.

Yardi: Sadashiv Raghunath, A.M.T.P.I. [*A* 1941], Senior Architect, Civil Aviation Wing, C.P.W.D., Talkatora Barracks, New Delhi, India; 91 Wellesley Road, New Delhi. G. B. Deolaliker, R. L. Gehlote, P. L. Sharma.

and the following Licentiate who has passed the qualifying Examination:—

Hendry: William Fyfe, Box 138, N.E. House, 1st Street, Salisbury, S. Rhodesia; 22 Enterprise Road, Highlands, Salisbury. W. D.'A. Cathcart, F. A. Jaffray, J. A. Cope-Christie.

AS ASSOCIATES (11)

The name of a school, or schools after a candidate's name indicates the passing of a recognized course.

Barker: Graeme Charles [Final], c/o Messrs. Blackburne, Norburn and Partners, P.O. Box 890, Nairobi, Kenya, E. Africa. S. L. Blackburne, H. T. Dyer, G. B. E. Norburn.

Bhatt: Bhanuprasad Ganpatlal [Final], Plot No. 207, 7th Road, Khar, Bombay, 21, India. C. M. Master, S. S. Reuben, S. J. Narwekar.

Bradford: James Henry [*L*], The Imperial Tobacco Ltd., P.O. Box 1682, Salisbury, S. Rhodesia. Applying for nomination by the Council under Bye-law 3 (*d*).

Fowell: John Digby (Passed a qualifying Exam. approved by the R.A.I.A.), 70-72 King Street, Sydney, N.S.W., Australia. J. C. Fowell, Prof. Leslie Wilkinson, D. K. Turner.

Ghadiali: Jal Hormusji [Final], 7 Toddywala Road, Poona, India. H. F. King, Prof. Claude Batley, R. H. Pastakia.

Merewether: Edward John (Passed a qualifying Exam. approved by the R.A.I.A.), 6 Kissing Point Road, Turramurra, N.S.W., Australia. K. H. McConnel, F. E. Towndrow, J. C. Fowell.

Methuen: John Allin (Passed a qualifying Exam. approved by the I.S.A.A.), P.O. Box 14, Umtali, S. Rhodesia. W. D.'A. Cathcart, J. A. Cope-Christie, I. D. MacGillivray.

Rao: Devanahalli Venkanna Raghavendra, B.Arch. (L'pool) (Liverpool Sch. of Arch.: Univ. of Liverpool), 2 Subbaramachetty Street, Basavanagudi P.O., Bangalore City, India. Prof. L. B. Budden, B. A. Miller, F. X. Velarde.

Rhodes-Harrison: George William, B.Arch. (Rand) (Passed a qualifying Exam. approved by the I.S.A.A.), P.O. Box 491, Bloemfontein, S. Africa. Applying for nomination by the Council under Bye-law 3 (*d*).

Simon: Leslie, B.Arch. (Rand) (Passed a qualifying Exam. approved by the I.S.A.A.), P.O. Box 9369, Johannesburg, S. Africa. Applying for nomination by the Council under Bye-law 3 (*d*).

Zikmann: Edward Ithiel (Passed a qualifying Exam. approved by the I.S.A.A.), Room 111, Alphen Building, Skinner Street, Pretoria, Transvaal, S. Africa. W. A. MacDonald, C. S. Lodge, V. S. Rees-Poole.

Members' Column

This column is reserved for notices of changes of address, partnership and partnerships vacant, or wanted, practices for sale or wanted, office accommodation, and personal notices other than of posts wanted as salaried assistants for which the Institute's Employment Register is maintained.

APPOINTMENTS

Mr. Charles Scott [*A*] at present Chief Assistant Architect (Health) City of Leeds, has been appointed Regional Architect to the South-East Metropolitan Regional Hospital Board and took up his duties at 27 Queen Anne Street, London, W.1 (LANgham 3264) on 18 December 1950.

Mr. A. Lloyd Spencer, A.M.T.P.I. [*A*], at present Senior Architect to the Ministry of Works, has been seconded to the Government of Northern Rhodesia and takes up the post of Assistant Director of Public Works in January. His address will be P.W.D., Central Offices, Lusaka, Northern Rhodesia, where he will be pleased to receive trade catalogues etc.

Mr. Raymond C. Witten [*A*] has been appointed Deputy Housing Architect to Belfast Corporation: he was formerly Senior Architect to the Scottish Special Housing Association Ltd., Edinburgh.

PRACTICES AND PARTNERSHIPS

Mr. E. C. P. Allen [*A*] is now practising from 32 Queen Street, Maidenhead, Berks (Maidenhead 1735).

The practice of **Carnell and White** [*F*/*L*], Paradise Chambers, King's Lynn, was acquired by **Mr. W. E. Norman Webster** [*F*] of 1A Station Street, Spalding, Lincs., in 1947. **Mr. W. E. Norman Webster** has now taken into partnership at the King's Lynn Office **Mr. H. Guy Bishop** [*A*] and the style of the firm is now **Webster and Bishop** [*F*/*A*].

Mr. G. C. Lane [*L*] is now practising from 'Rawhiti', Trafalgar Square, Nelson, New Zealand, and will be pleased to receive trade catalogues etc. at that address.

Mr. H. Victor Maddox [*A*] will shortly be commencing practice in British East Africa. He will be pleased to receive trade catalogues, samples etc. particularly those suitable for tropical use. His address is P.O. Box 90, Bukoba, Tanganyika Territory.

Mr. Stanley A. Newman [*A*], having resigned his appointment as Senior Town Planning Officer to Willesden Corporation, has entered into private practice with **Mr. David Levinson** under the title of **Newman, Levinson and Partners,** 17 Dorset Square, London, N.W.1, where he will be pleased to receive trade catalogues etc.

Mr. Donovan Purcell, M.A. [*A*] has taken into partnership **Mr. Frederick Johnson** [*A*]. They will practise under the style of **Purcell and Johnson,** with offices at 64 Bethel Street, Norwich and 1 Scroope Terrace, Cambridge.

Mr. H. R. Venning [*L*] and **Mr. G. R. Vaughan Ellis** [*A*] have entered into partnership and practise as **Venning and Ellis** at Midland Bank Chambers, Liskeard, Cornwall (Liskeard 3294).

CHANGES OF ADDRESS

Mr. A. L. Crookall [*A*] has removed from 220 Broad Lane, Liverpool 11, to c/o Y.M.C.A. Hostel, 42 Kingsley Road, Northampton.

Mr. John Howard Leech [*F*] has moved from Kinsbourne Green, Harpenden, Herts., to Ridgeway, Burford, Oxfordshire (Burford 3173).

Mr. Keith P. Roberts [*L*] (Roberts and Butterfield) has moved from 6 Avery Row, New Bond Street, London, W.1, to 21 Woodstock Street, New Bond Street, London, W.1 (GROsvenor 1140) and is now practising under the name of **Keith P. Roberts** [*L*] at the new address, and at 2/4 Upper Dagnall Street, Market Place, St. Albans, Herts (St. Albans 6886). He will be pleased to receive trade catalogues etc.

The new telephone number of **Robinson and Kay (Mr. H. A. Kay** [*A*]), who practise at Victoria Chambers, 94 High Street, Stourbridge, Worcs., is Stourbridge 58154 (two lines).

The new address of **Mrs. Jeanne Shinn** [*A*] (formerly **Miss Jeanne Frances Goodchild,** 37 Blakes Lane, New Malden, Surrey) is 128 Upper Richmond Road, Putney, London, S.W.15.

Mr. Lesslie K. Watson, M.B.E., T.D., M.A., A.M.T.P.I. [*F*] has moved his office to 6 Gray's Inn Square, London, W.C.1. The telephone number, HOLborn 2784, remains unchanged.

PRACTICES AND PARTNERSHIPS WANTED AND AVAILABLE

Associate (37) A.A. Diploma, seeks junior partnership, salaried, preferably in London area, in established office, but would be pleased nevertheless to correspond with a member contemplating practice in this area. No capital available, but good connections possible. Box 79, c/o Secretary, R.I.B.A.

Associate in early thirties seeks partnership in home counties; limited capital available. Oxford or Cambridge preferred. Can take up appointment July 1951. Box 93, c/o Secretary, R.I.B.A.

Experienced Associate desires partnership or senior position leading to partnership in the Ipswich area. Some capital available. Box 90, c/o Secretary, R.I.B.A.

Fellow with established varied practice in Lancashire-Cheshire area offers partnership to young practising Associate or experienced managing assistant. Box 89, c/o Secretary, R.I.B.A.

WANTED AND FOR SALE

Member seeks damaged copy of Banister Fletcher's History of Architecture for cutting up to make index of monuments. The pre-renaissance sections are the most important. Box 91, c/o Secretary, R.I.B.A.

For sale, in one lot. About 70 architectural books from an architect's library, including such works as Gotch's Rennaissance (2 vols. folio), Macartney's Later Rennaissance (2 vols. folio) and Trigg's Formal Gardens. List on application to R. M. F. Huddart, The Copse, Pennington, Hants. Can be seen by appointment at Wimbledon.

For sale. American 'Architectural Forum' and 'Progressive Architecture' 1947, -48, -49, -50. Box 92, c/o Secretary, R.I.B.A.